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A Database Publication

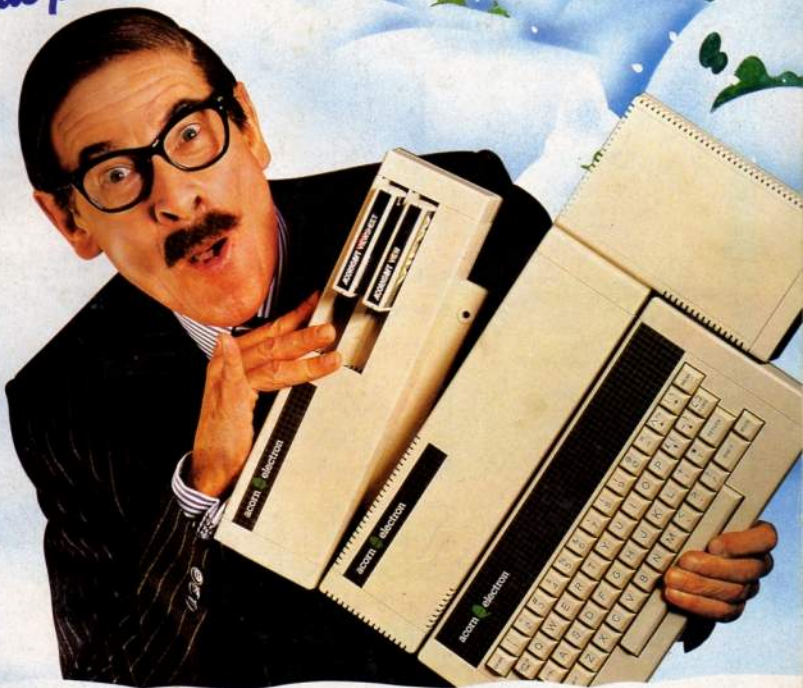
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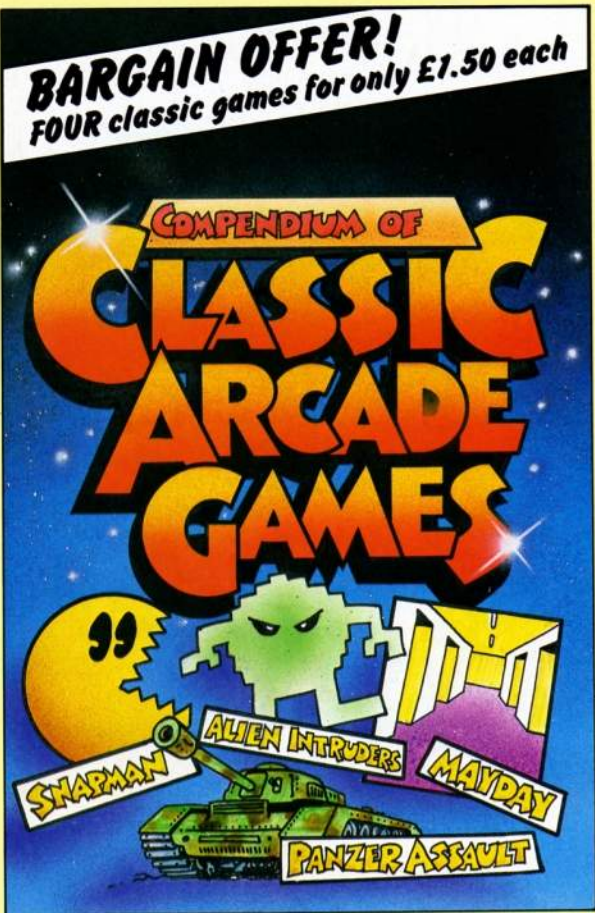
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electron user NEWS

Christmas comes early for Electron owners

CHRISTMAS has arrived early for Electron owners, with the wrappings coming off lots of exciting new hardware and software.

It will all be displayed at the Electron & BBC Micro User Show, New Horticultural Hall, Westminster, from November 14 to 17.

One of the main attractions is bound to be the Tube from Advanced Computer Products – an interface which connects the Electron to the Acorn second processor, giving an extra 64k of memory.

The device plugs into the Plus 1 and "gives a dramatic increase in speed of operation", according to ACP's John Huddleston, who is also hoping to demonstrate, and possibly launch, a 1MHz bus for the Electron at the show.

All Plus 3 owners will want the new tape-to-disc ROM, T2P3, which Slogger is unveiling.

It will enable them to transfer most games from tape on to the Plus 3 disc system, greatly reducing the time taken

to load and run a new game using T2P3 due to the much faster transfer rate.

The memory used by the ADFS does not affect the operation of T2P3 and even very large games may be transferred.

This has been achieved by programming the T2P3 with ADFS operations but using the minimum of Electron memory.

Slogger says a large number of games may be transferred to a single disc, and once there may be loaded and run by selecting the appropriate game from the

menu. Price: £19.95.

From the same company comes Stargraph, a service ROM designed to fit into any ROM expansion socket to provide some useful extensions to the many graphics commands already available on the Electron.

It is compatible with the Plus 1 and Plus 3 interfaces and may be used with either or both. Price: £21.95.

Micro Aid is demonstrating the LTR1, a hard character, letter quality printer imported from Japan and priced at £110, and is launching its Pay Roll software for

the Electron at £29.95.

The show sees an unusual event – the launch of a company, Shards Software, that will be offering adventure game Woodbury End for £9.95 and arcade game Whoopsy for £6.95.

Kansas City Systems is launching two new games at the show. Adventure of Zore, a scrolling adventure costing £8.50, is the last in the trilogy which includes Dracula Island and Ring of Time.

Moon Buggy, from the same firm, is a seven level arcade game at £8.50.

Comms pack is here

THE long-awaited communications package for the Electron has finally arrived.

Developed jointly by Acorn and Pace Micro Technology of Bradford, it will enable Electron users for the first time to reap the benefits of the telecommunications revolution.

The software for the package – known as Tellstar – has been written by Andy Hood, author of the acclaimed Commstar for the BBC Micro.

With its combination of viewdata and Ascii terminal capabilities contained in one sprom, Tellstar is housed on board an interface card designed to fit into a Plus One.

It is being offered with the bestselling Nightingale modem, also from Pace.

Thriving in Hong Kong

ELECTRON owners living in Hong Kong can now join their own Acorn Computer Users' Society.

The group already has more than 50 members and a monthly journal whose editor, Peter Dolwin, wrote to say that *Electron User's* monthly appearance on newsstands in the

Crown Colony is always an eagerly awaited event.

Members meet every month at the premises of Acorn distributor Brainchild Computers in a building known locally as the Amah's Tooth because of its gold tinted windows.

The range of interests represented include

education, music, business, games and programming.

Guest speakers, including leading figures in the computer industry passing through Hong Kong, are invited to address the monthly meetings.

Recently Roger Broadie, former deputy director of the

Microelectronics Education Project spoke to the group.

The society receives full support from Acorn, and Brainchild, and is able to offer its members a 25 per cent reduction in the cost of equipment necessary for them to connect to Hong Kong Telephone's Micronet service.

Tim programs himself into a job

TIM Davis has made certain he won't be joining the ranks of the unemployed when he leaves school - by winning a job.

Tim, 17, of Formby has to thank his Electron for ensuring that he was successful in the North West competition sponsored by the *Electron User*.

Now he'll be joining Database Software, a division of Database Publications, as a trainee programmer once he has completed his A levels.

The teenager, who already has nine O levels to his name, was one of

350 unemployed youngsters from the North West who entered the contest.

All they had to do was send in any program they had written either for the Electron or the BBC Micro.

Tim's entry was a disassembler in machine code, including Ascii dump, labels and other utilities for the Electron.

This took him into the grand final which was held during the opening day of the Electron & BBC Micro User Show in Manchester.

He negotiated the last hurdle by beating off the competition from



Tim Davis... "It's fantastic"

the two other finalists in a test situation followed by an interview in front of a panel of judges.

"It was all a bit nerve racking", he told *Electron User*, "but it was worth it to win a job."

"What more could any one want, particularly when you live in an unemployment black spot like Merseyside".

After discussions with Database, Tim

decided to return to school to take his A levels before starting work.

"It's fantastic", he said, "they are even going to keep the position open for me while I finish my schooling".

Judges for the final included star North West disc jockey Mike Sweeney of Piccadilly Radio, Richard Hemingway of Radio Manches-

ter, Peter Davidson, head of Database Software, and Derek Meakin, joint managing director of Database Publications.

"The standard of entries for the competition were very high", said Derek Meakin, "but Tim's was nothing less than brilliant."

"He has a great future ahead of him with our company".

Facts on file

SOFTWARE house Kosmos has launched the first nine titles in a new range of leisure and educational programs for the Electron called the Factfile 500 Series.

Twenty programs are being released before Christmas, each containing 500 facts - a total of 10,000 questions, answers, facts and figures compiled by teachers and specialists and presented in multiple choice format.

Factfile 500 packs cost £3.95 each and are intended for use with any of the Kosmos Answer Back Quiz master programs.

Titles so far released are Arithmetic, Spelling, Natural History, General Science, Junior General Knowledge, Senior General Knowledge, Know Scotland, First Aid, and Sport.

The Factfile 500 programs are also available on disc for £5.45 each.

Electron is magic

A TOP UK magician has chosen an unusual co-star to help him cast a spell over audiences across the country - an Electron.

David Hambly, known professionally as "The Micro Wizard", is believed to be the only entertainer in the world to feature a home computer in his act.

With programs written by himself, the magician waves his magic wand to put the Electron through a series of astonishing "tricks".

Such has been his success of late that he has made guest appearances on Pebble Mill at One and Thames Television's Database.

On leaving school, David's first job was as a tea taster. However his real love remained the stage. Working part time as a magician soon took him to Germany, Belgium, Norway, Hol-

land and Denmark.

It was while he was on the staff of a large electronics firm in Ilford that he began to get interested in computers. This in turn led to him introducing them into his act. Since then he's never looked back.

A member of the elite Magic Circle, David Hambly is the author of the world's first book on computer magic.

He is also currently writing a software package to enable Electron users to perform a com-



David Hambly

plete one hour magic show.

"People have always said the Electron is magic", he says. "All I have done is set out to prove it".

Sideways ROM board

LATEST hardware development from Wizard is a sideways ROM expansion board for the Electron. Called the Sidewinder, it has full through bus connection and four sideways ROM sockets which allows peripherals such as the Plus 1 and disc drives to be used together.

Included in the package is a programmable joystick interface with Joy ROM. This is said to have 99 per cent success rate converting keyboard games to joystick. Price £39.95.

LONELY SERENADE IS OVER

A SOFTWARE/audio system for the Electron that takes the loneliness out of practising a musical instrument has been launched by a consortium of professional musicians and software writers called Music Play and Display Operating Systems.

Each twin cassette Micro-Maestro pack is tailored to suit a particular instrument or group of instruments and features contemporary music.

Learning musicians can practise with the program and, having gained confidence and ability, perform with full professional studio accompaniments.

The initial Micro-Maestro range comprises packages for keyboards, concert-pitch instruments, B-flat instruments and a recorder tutor.

Birthday bargains

A MAJOR exhibitor at all the Electron & BBC Micro User shows, Watford Electronics will be celebrating its 13th birthday during the November event.

The company, which started in a bedroom and grew to be one of the country's leading suppliers in the Acorn market, will mark the occasion with a number of "sensational" bargains.

"No one will have seen anything like it", Watford boss Nazir Jessa told *Electron User*. "It may be our birthday, but it will be our customers who end up with the presents. We intend to make sure of that". Such has been



Nazir Jessa

the success of the company over the years that it recently moved into a purpose-built £700,000 headquarters that reflect its current multi million pound annual turnover.

This now houses Watford's 30 staff and more than 7,000 different components and micro peripherals.

COMPUTER'S PLACE IN THE CHURCH

THE recently-formed Christian Micro Users Association has pledged to support the Electron in its work of linking together computer users of various denominations and promoting the use of micros in church activities.

Association secretary

Philip Clark told *Electron User*: "There is a great need to discover and make contact with the individuals and companies producing Christian software".

"We also need to share the expertise and ideas of the many who have sought to use

micros in their church-related activities".

The aim of CMUA is to concentrate on the popular home computers like the Electron and it has already unearthed a significant number of programs based on Bible studies.

Forum

The association intends to produce a quarterly magazine called *Christian Micro* and, from next January, launch a series of tape magazines for specific micros.

Its other activities will include the formation of local groups, arranging Christian micro exhibitions and conventions throughout the country, acting as a forum for the sharing of information about micros in the church, and promoting the highest quality Christian software.

War games club

SOFTWARE publisher Lathlorien has formed the Warmaster Club, an organisation for war game and adventure game enthusiasts, including Electron users.

There will be no charge for membership, says Lathlorien director Roger Lees. Members will receive regular detailed advance information about new war and adventure releases available through computer dealers.

"The additional benefit of club membership will be to offer a range of club only titles", says Lees, "some of which we hope to publish within the club on behalf of members who are software authors."

"It is hoped that the club will become a vehicle for publishing a range of low volume, special interest software which cannot justify the costs of full commercial publication".

New board gives Electron speed of BBC Micro

A REMARKABLE range of new products designed to enable the Electron to perform as powerfully as the BBC Micro has been announced by Andyk.

The company says its £29.99 Fast Electron Board makes the speed of the machine in all modes comparable to that of the BBC Micro.

The increase in speed will allow BBC Micro software - where speed

is the limiting factor - to run successfully on the Electron, says Andyk director George Rawlins.

"All Electrons can be modified easily and the changeover from fast to slow or vice versa can be switched. The increased speed and overall low power consumption is ideal for control applications", he added.

Capability

Also released by Andyk are a £34.99 RS 423 serial port which has drive capability and software interface similar to that of the BBC Micro and plugs into the Plus 1 cartridge slot.

Then there's a £9.99 eeprom card which can take applications software and will also allow utility ROMs to be used.

Finally a £24.99 battery-backed sideways

RAM will allow ROM software to be developed and downloaded via disc or tape.

Rawlins told *Electron User*: "My efforts have concentrated on bringing the Electron into the low cost control environment because the machine is more reliable than other micros in its range."

"This is due to the very large scale integration technology used within it, giving the added bonus of low power consumption."

"My company also intends to launch three other products in January to give the Electron more versatility in the control environment."

"These are a real-time clock, an extended I/O capability giving the Electron a user port, and a low-cost LCD display which will make the machine more portable".

Revision's easier on your micro

LEADING publishers of printed revision aids for secondary school students Charles Letts has launched Keyfacts Revision software for the Electron.

The eight programs are designed for use throughout the O-Level GCE, CSE and GCSE courses.

Letts says the programs act as a supplement and enhancement to book based learning rather than simply duplicating it.

Subjects covered are biology, chemistry, computer studies, English literature, geography, mathematics and physics.

The programs employ a variety of approaches to maximise the student's interest, the aim being to encourage active participation by the student in home studies, and they feature extensive use of graphics.

Price of each package is £11.50.

SOLIDISK EFS COMBINES DISC AND A SOCKET FOR THE WIN

Solidisk Double Density DFS is now the ultimate in reliability and supported by the largest amount of software available for the Electron.

Solidisk relies on a good product and a large support network to win the heart of the user.

With over 75 Local Experts, covering England, Scotland and Wales, Solidisk can offer many users regional free fitting and advice.

With an ever increasing catalogue of free software, even users who are new to the Disc system can expect to build up a large library in a fairly short time.

Solidisk Software Support Service already has responsibility for over 50,000 BBC computer users and the ability to give you the best service matched only by the largest companies.

Solidisk Double Density DFS handles both BBC Discs and Electron Discs, in single and double density whereas the Acorn's PLUS 3 can only handle ADFS discs.

Solidisk ADFS has nice features such as automatic disc format sensing, built-in disc formatter and verifier and programmable disc speed.

It also has more than 20 disc utilities built into the ROM.

Standard features for both BBC DFS and ELECTRON ADFS implementations include:

1) Automatic Write Error Correction.

2) Automatic 40/80 track stepping, the ADFS 2.1 will let you read and write 40 track discs if you have an 80 track drive.

3) Disc repair facilities.

Disc sector editor (*DZAP), memory editor (*MZAP), recover good sectors (*RECOVER) rewrite multiple sectors (*RESTORE), read bad sectors and bad track (*RTRACK), repair and restore bad sectors and track (*WTRACK) and the powerful disc copy (*DCOPY) which is capable of duplicating even some non BBC discs.

4) Tape to disc facilities.

Direct transfer from tapes to disc (*TAPEDISC) will work with all unprotected programs. *TAPELOAD and *TAPESAVE will cope with more difficult ones. Only in some cases (multipart games cassettes) will you need Solidisk tape copier.

5) Wordprocessing facilities.

This facility allows *BOOT and other text files to be edited, saved and printed in any screen mode.

6) Automatic disc format sensing.

On Shift-Break, the STL ADFS 2.1 will detect the disc format and use the right BBC DFS or Electron ADFS to run.

On the Electron ADFS side, the 2.1 ROM also has some very nice features:

1) Extensive Disc formatting facilities.

*FORM40, *FORM80, *FORM160 and *WFORM (for the Winchester) are available to handle any disc drive.

2) Disc verifying facilities.

*VERIFY will check all disc sizes including Winchester for media defects.

3) Number of opened channels.

This is the star feature of Solidisk ADFS.

This facility (*OPEN) allows you to specify how many files will be opened in a program, thus maximising the available RAM while avoiding buffer page swapping as on the Acorn ADFS.

It leaves PAGE at &1900 for most programs, gives more room to View and Viewsheet and avoids unnecessary conversion work for many programs originated for the BBC DFS to be run on your Electron.

On the BBC DFS side, the STL ADFS 2.1 handles both single and double density and in addition, it supports:

1) Unlimited catalogue entries.

2) Unlimited filesize.

THE SOLIDISK 16k SIDEWAYS RAM:

Solidisk Sideways RAM is an almost indispensable add-on for the Electron with disc drives.

The Sideways RAM occupies the same memory area as the BASIC or ADFS ROM in the micro's memory map. This means that Sideways RAM can run almost any ROM type software, including languages, utilities and games.

Sideways RAM is notably invaluable to run games and specially "MEGAGAMES".

Games and programs run at 2MHz clock speed in Sideways RAM, if loaded into the Electron RAM, they can only run at 1MHz clock speed, ie half the speed of Sideways based games.

Megagames are too large to be run on the unexpanded Electron. They use extensively 8 colour high resolution screen (mode 2), background music, sound and

high speed sprites.

Solidisk supply free software to maximise the use of Sideways RAM on the Electron. These include Wordprocessor, Spreadsheet, Database, Toolkit, Machine Code Monitor, Printer Buffer, Sprites, Playtunes, Virtual Memory Processor, VDU Replay, Screen Effects, digitised pictures etc ...

THE WINCHESTER SOCKET:

Solidisk has the most powerful Winchester system for the BBC computers and the Electron. The Winchester system can provide from 20 Megabytes to a theoretically possible 1300 Gigabytes of storage, directly on line with the Electron.

The same Winchester unit can be used on the BBC B, the BBC PLUS and the Electron without any change.

You can read more about it in BBC Micro User or in Acorn User Magazines. Price of a 20 Megabytes system is only £700.00 + VAT (£805.00).



UPGRADE, 16K SIDEWAYS RAM WINCHESTER FOR ONLY £59.00

SOLIDISK SPECIAL MITSUBISHI DISC OFFER:

This offer comprises:

- One 80 track Double Sided (640 kbytes) 3.5" Mitsubishi disc drive with its own PSU. Cased in beige.
- Solidisk EFS Disc Upgrade, 16K Sideways RAM and Winchester socket.
- One software package containing four 3.5" discs, detailed below.
- Full one year guarantee and 2 manuals.

PRICE: £200.00

You can also order as many Megagame Packs at the same time as you like. Each Megagame Pack consists of three 3.5" discs and contains on average 20 games.

THE SOFTWARE:

The software contains everything to start a library: the big four (Database, Wordprocessor, Spreadsheet and Graphic), Utilities and Games.

Database:

Solidisk Database is very easy to understand and use. You are presented with a 15 option Menu. Each option will lead to a new Menu and so on. Mode 3, 80 column screen is used throughout so that what you see is what will be printed on paper. With Solidisk Database, you can create as many records as you like, each record can be up to 15 fields of up to 60 characters. You can sort, search, index, mailmerge, append, create subset, calculate etc. Solidisk use the same Database to process all your orders.

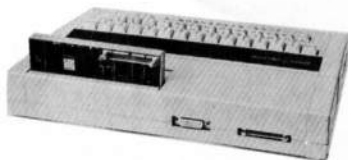
Wordprocessor:

Solidisk Wordprocessor is WYSIWYG type (What You See Is What You Get) and has all the commands of a professional tool. It features 80 column screen, on screen justification, page numbering, search and replace, word count, free space, Wordstar like editing commands: insert and overwrite, block mark, move, copy, delete, save, load to cursor, * commands etc..

Spreadsheet:

Solidisk Spreadsheet is also Menu driven and has the same file

structure as Solidisk Database. You can have as many rows and columns as you like, each column can be as small as two characters wide or as big as 70 characters. All maths functions are



supported. Recalculate, Replicate, Print, Print If, Sort, Search, Define Zone, Mailmerge, Text Input/Output etc... are included.

Toolkit:

Solidisk Toolkit is almost indispensable for Electron programmers, it has 24 star commands (Status, Wipe, LVAR, Move, Search and Replace, Expand, Salvage, Keyload etc...).

ORDER FORM

PRICE LIST and ORDER FORM.

	Price	P&P
Diskettes.		
Verbatim 3.5" box of 10	£40.00	£1.00
Software Pack	£10.00	£1.00
Solidisk EFS	£59.00	£1.00
Disc Offers.		
640k Mitsubishi MF453 Disc Outfit	£200.00	£3.00
1.3 MB Fantastic Offer	£310.00	£3.00
20 MB Winchester system	£805.00	£10.00

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Software Surgery

THE COLUMN THAT TAKES A LOOK INSIDE THE LATEST RELEASES

Paintbox is a big draw

Paintbox II
Beebugsoft

BEEBUGSOFT have steadily gained a good reputation among owners of the BBC and Electron micros, and so I was pleased to receive this cassette for review.

There have been other drawing packages for the Electron, and it is perhaps important to look for enhancements and original features.

One telling point for this program is that there are too many options to fit into the main menu, and so there are some placed onto a secondary menu which has to be accessed from the first.

The options are "acquired" in a rather ikon-like style, with the cursor being moved by the

keyboard or joystick to the symbol.

Certain "dangerous" options have to be acquired twice by the Space bar, thus providing a safety net for unwary users.

Working in Mode 0, 1 or 2, there is a wide range of colours available, with the most colourful screens, of course, in Mode 2.

Shapes can be drawn using a continuous row of dots, using any colour, with colour changes being easily made at any point.

The dot can be replaced by a brush of variable width, and also variable shape, including a very powerful option to define your own shape of brush.

Just these few options kept

me occupied for quite a while as I explored their potential by drawing variations of triangles, rectangles, circles and more complex shapes.

As is almost standard now, there's a rubber band facility. This allows for accurate placement of shapes by showing what is about to appear on-screen just before the final selection is made.

Indeed, another colour may still be chosen while in this mode, thus increasing the possibilities.

Shapes can be infilled, although complex shapes tend to need several attempts.

Text can easily be interspersed with the graphics, and this is just one of the range of features whose use is clearly displayed in the accompany-



ing 48-page booklet.

This is essential reading if the true potential of this system is to be fully explored and exploited.

With GCOL options available, and the colour palette changeable, there is enough to bewilder or excite any user.

I have used other drawing packages on the Electron, but I haven't found a better one yet.

Phil Taylor

Rousting robots aids your maths

Quick Thinking Plus
Mirrorsoft

THIS package by Mirrorsoft contains two games for youngsters, Sum Vaders and Robot Tables. Both programs are designed to give practice in number skills.

Sum Vaders requires you to

use some quick thinking to stop the invasion of robots.

Addition, subtraction, multiplication and division problems are presented and you have to get the answer right first time.

An alien spacecraft bearing a number moves across the screen. It releases a robot

invader which also has a number.

The object of the game is to destroy the robot before it reaches the ground. To do that you have to type the correct response to the sum.

In the addition option, you have to add the two numbers, while the subtraction option

has you taking the smaller number from the larger.

The product is entered in the multiplication option and the smaller number is shared into the larger in the division option.

As your skills increase, so

Sports quiz scores good points

Answer Back Sports Quiz
Kosmos

KOSMOS has developed quite a reputation for its Answer Back programs, and the latest addition to the collection, the sports quiz, keeps up the good work.

What you get for your money is more than 750 questions divided into 26 categories.

These must cover just about every area of sport.

The questions can be mul-

tiplied choice, or yes/no answers. The whole program is regarded as a sporting contest - you against Kosmos.

Every time you get a question wrong, it's a point for Kosmos. But if you get one enjoyable to play.

For each correct answer you also get three credits, and these credits can be cashed in for a choice of two games - football or tennis.

In football, you keep goal against a very competent Kosmos forward line, while in tennis you score points each

time you hit the ball.

Apart from the set questions, the program gives you the ability to create your own quiz.

This doesn't need to have a sporting theme - I've used it to create questions on science topics.

This program is well-written and bug-free. The games, while not arcade standard, demand some skill and are enjoyable to play.

The main menu is clear and easy to use.

Rog Frost

From Page 13

does the difficulty, the attackers coming in lower and faster. Your turn ends when five aliens get past and land on Earth.

There are five levels of difficulty for the adding and subtracting options. Only three levels are available in the multiplication and division options.

A nice feature of this program is that two people can play in competition, each player at his own level of difficulty. This enables a child to compete with an adult, yet still be able to win.

In the two-player game, high scores are separately recorded.

The second program, Robot Tables, is based upon a manic machine designed to frustrate the would-be mathematician.

The aim of the exercise is to create robots – in contrast to Sum Vaders, where the object was to destroy them.

The robots are produced from lumps of raw material that is fed in from the left-hand side.

Each lump contains a number. You have to decide whether that number is the next one in the sequence that is displayed below.

If you reject good material – a correct answer – or if you accept bad material – a wrong answer – the machine makes a damaged robot.

If the material is OK and it is accepted by you, a perfect robot is produced. If you correctly reject bad material it's recycled.

Points are credited for material recycled and each undamaged robot produced.

Bonus points are given for every sequence of ten robots that are created.

There are two modes for the game – learning and testing. In the learning mode the correct sequence of numbers is first displayed.

There are much longer response times and answers are displayed after each robot is made.

The testing mode is much faster and points are lost for incorrect responses.

I'd be happy to use the programs with most youngsters.

John Woollard



Tarzan's a right terror

Tarzan Boy
Alligata

THIS is a four screen arcade game set deep in the jungle. You take the part of Tarzan and the object is to find Jane.

Tarzan starts on the first screen and Jane is on the last. All you need to do is follow the arrow signs which will take you to her.

It might not sound difficult but, after an hour's play I had only managed to master

screen one – and that's the easiest.

All the dangers to be found in the jungle are here – gorillas will crush you, poisonous snakes will bite you and monkeys will drop coconuts on your head.

There are also waterfalls, rivers with floating logs and crocodiles to overcome.

In addition to these obstacles are the usual collection of mean-looking nasties.

Screen one involves ducking under a snake slithering down from a tree. Just past this are several lifts which take you up to different platforms.

Next you have to leap across a deep chasm to another platform. Watch out for the monkey with coconuts here.

Then jump the next chasm, up the lift and wait for a particularly nasty disembodied head with gnashing teeth to move to the correct position.

A couple of leaps and it's on to the next screen.

Tarzanboy is a Mode 2 game with a surprising number of moving objects. The Electron isn't noted for it's speed in this mode, but although Tarzan moves a little slowly, generally the animation is fast and smooth.

You won't be disappointed with Tarzan Boy. It's one of the best levels type of game released in the past couple of months. **Roland Waddilove**

A look at artificial intelligence

Talkback
Acornsoft

SOME while ago, when computers were things owned by rather strange people with more money than sense, I went to see a program called Eliza.

It was almost the first program I can remember seeing, and it made a great impression on me.

It seemed that the computer could be spoken to through the keyboard, and that it actually answered back in an intelligent manner.

Such programs are old hat now, but this cassette might be interesting for those keen on Artificial Intelligence, for it gives a marvellous insight into

the way such a program is written.

The main menu allows several options, one of which is to load a character from tape.

Two are provided, Astro and Bomb, and fans of the film and book Dark Star will have the opportunity to convince the bomb to return to the docking bay...

The accompanying booklet gives quite detailed instructions on how to decide the characteristics of other people, through the examples of Helen and Ron.

Creating or altering a character is fairly straightforward once a little familiarity is gained.

Keywords – including short phrases – and responses can

Golden battle

Beach-Head
US Gold

IT'S time to get your tin hats out and lead the assault on the enemy territory in Beach-Head.

This is one of the first conversions of their legendary Commodore 64 software, and it's great.

By moving the cursor which represents your forces, you can select one of two opening scenarios.

In the first you must guide your fleet through a narrow channel which is mined and is constantly criss-crossed by enemy torpedoes.

You score for every ship successfully negotiating the channel, but you inevitably lose a few ships.

The second option is to skip this section and proceed with a full complement of 10 ships to the anti-aircraft game.

This part of the game is great fun – enemy aircraft dive at your ship with guns blazing.

You now take on the role of gunner, moving the gun up, down, left and right, pumping out shells at wave after wave of fighters.

Speed and accuracy are

be entered or altered, so that fairly predictable conversations can be held, either between the two selected characters, or between the user and one of these.

The same keyword could provoke differing responses, but there is a priority system which decides which response should occur.

Actually, I found the conversations themselves to be rather repetitive and bland, and I was much more interested in the actual designing of characters.

The average Electron owner will probably get fed up with the possibilities fairly quickly, but those with a particular interest in this area will find it most worthwhile.

Phil Taylor

essential here, as with each hit from the enemy your damage points increase.

Each time the total reaches 20 damage points you lose another ship.

The enemy planes defeated, their fleet now comes into play.

My first attempts at lobbing shells at silhouettes of enemy vessels were disastrous.

I then noticed a small notice on the display informing me of how long or short my last shot was – aren't computers wonderful?

Having survived this mêlée, the surviving ships head for the beach and land their cargo of tanks – the number of tanks landed being proportional to the number of surviving ships.

The tanks must be guided through a tortuous maze of tank traps and gun emplacements.

Finally they reach their target – a huge gun mounted on top of a hill. The hill is protected by numerous guns which must be eliminated before the large gun is destroyed.

The graphics are excellent, and the fact that your performance on each level determines your fire-power on the next is a great idea.

James Riddell

This Lisp is a real snip

Lisp – ROM Cartridge Aconsoft

THIS was one of the first languages to appear on cassette for the Electron, and at last the full implementation is available on ROM cartridge for the Plus 1.

Priced at £29.95 it may seem expensive, but represents a considerable advance on the tape version reviewed in *Electron User*, February 1985.

The Lisp cartridge takes precedence on power-up, and typing VERSION tells us that this is version 5.

Turn on the garbage collector messages and force a collection, and we find we have 16.6k available in Mode 6. The extra memory available to the ROM based Lisp allows several enhancements – larger programs, graphics, neater recursive functions instead of loops, and less time garbage collecting.

Apart from these benefits of extra memory, how much more do you get for your well-earned money?

I knew that Lisp came on a 16k ROM, and was surprised

to see the cartridge contained 10 example programs, including games, educational programs, utilities and graphics. I was even more surprised when I couldn't find these programs in the ROM on disassembly. Efficient packing? Tokenising? No, the cartridge also contains a 16k serial ROM.

The examples are all taken from the Aconsoft book, which must be bought separately, and are loaded by selecting the ROM filing system, and *EXECing the file.

When you need, say, a sort function, this can be read from ROM as if it were typed from the keyboard, thus saving time and energy.

In a language where every machine has its own dialect, Aconsoft Lisp could well set some form of standard for micro-Lisps.

There's no PROG function, but Lisp being the friendly, flexible language that it is, this can be defined if you simply cannot do without GOTOs.

The OBLIST contains 130 identifiers, compared to 114 for the tape. Extra facilities include MODE, USR, binary

operators, TIME/CLOCK functions, warm or cold start from a break, and textual error messages.

The lack of a MODE command was the only serious drawback of the cassette, which included lots of functions (ONEP, ZEROP, ADD1, SUB1, CAR/CDR combinations) which are very easily defined in Lisp.

The VDU22 command can be used to change from one mode to another that use the same amount of RAM, say from 4 to 5, but not from Mode 6 to 3.

Since MODE has a delayed effect – it waits until the next Evaluate: prompt is displayed, there may still be occasions when VDU22 is needed, but in general MODE is a very useful function to have.

There is, however, a serious problem with this Lisp – it is extremely difficult to get hold of.

This is a great shame, because it is a superb implementation of an exceptionally interesting computer language, and 32k of ROM at this price is a real bargain.

Nick Rhodes

QUICK PEEKS

Whoopsy: Baby wants to play with his toys but Mummy wants him in bed. The baby distracts her by leaving whoopsies, but he must watch out for the patrolling potties. As you progress through the screens there are more toys to play with and more potties to contend with. (Shards)

Woodbury End: An illustrated adventure set in a quiet English village. You wake up in a darkened room tied with a rope and your memory a blank. In this real time adventure you have 20 days in which to unravel the sinister secrets of Woodbury End. (Shards)

Robin of Sherwood: It is over 100 years since the Normans conquered England, but rebellion still flares. Many English secretly believe a Hooded Man – a fugitive – would be chosen by Herne the Hunter to lead the English against the Norman tyranny. This time is now ready for the appearance of the Hooded Man – you. This Scott Adams' adventure includes features such as the stringing

together of commands and input of complete sentences. A free hint sheet is included with the game. (Adventure International UK)

Competitive Maths: Improve your mental arithmetic by beating the clock to a new high score. The idea is to answer as many quick-fire questions as possible within a minute. You can choose any of addition, subtraction, multiplication or division – with varying skill levels. (Duckworth)

Terrormolinos: A text adventure of a holiday spoof set on the Costa Brava, in which you must survive a two-week package holiday and return home with 10 snapshots to prove it. In this witty game every holiday disaster can and does occur. (Melbourne House)

Shuffle: A sliding block puzzle of the traditional type. You have to unscramble a puzzle made up of a number of blocks,

one of which is a blank. There are two sets of control keys. One set moves the blank and the other moves blocks into the blank. The idea is to solve the puzzle in the fewest possible moves and the shortest possible time. There are eight different puzzles with three levels of difficulty. (Budge)

West: It is the year 1884 somewhere in the Wild West. You are on the track of a notorious gang of robbers who have gone to ground near an abandoned mining town, deep in Indian territory. Your objective is to gain promotion to the rank of Marshal by outwitting the robbers and collecting as much of their loot as possible. (Talent Computer Systems)

Chuckee: An upgrade for Chuckie Egg which enables you to change the numbers and positions of the walls, ladders, seeds, geese and conveyors. In effect, you can design your own screens. However, you need to own a copy of the original before you can use Chuckee. (Bit Twiddlers)

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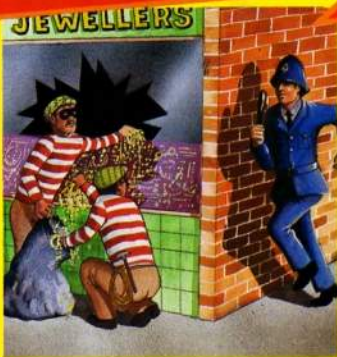


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MISSILE ATTACK

By MIKE WARMAN

MISSILE Attack is a version of the popular arcade game in which you must destroy incoming missiles with your laser bases.

If enough missiles get through — five or more — your city is destroyed and you along with it.

If you clear one screen you go to another with more and faster missiles and fewer shots with your lasers.

The program is run mainly in Mode 4 for speed but still uses colour and sound to good effect. The top ten hi-scores are displayed at the end of each game.

The program uses integer variables to increase speed. For this reason REM statements are also omitted.

The number of missiles can be changed by altering the value of N% at line 410

and their speed changed by altering the value of U% at line 510.

The title page and other double height characters are achieved by poking into the Mode 4 screen memory, which starts at &5800.

The micro looks at the character generator in ROM and pokes the value that it finds into the screen.

Each character square is defined by 8 bytes. PROCbigchars is used to do the screen poking.

The letters are held in data statements at lines 2390 and 2400.

Three different short tunes are played in the game. The notes to be used and their lengths are also stored in data statements.

To give the ten highest scores a short bubble routine is used — PROCsort, lines 2440 to 2510.

VARIABLES

- A% Number of shots left on laser 1.
- B% Number of shots left on laser 2.
- C% Number of shots left on laser 3.
- D% Number of missiles destroyed within a level.
- E% Number of missiles let through in a level.
- F% Used for recursive loops.
- H% Horizontal position of gun sights.
- V% Vertical position of gun sights.
- J% Total number of missiles let through.
- L% Level number.
- N% Number of missiles.
- I% $\frac{1}{3}$ of N%.
- O% $\frac{2}{3}$ of N%.
- R% Decides missiles' path.
- U% Speed of missiles.
- W% Flag to indicate whether laser can fire.
- Q% Horizontal position of base which is firing missiles.
- m% Starting address in screen memory for double height characters.
- M% Position in screen memory in which the computer is currently poking.
- h% Increment for M%.
- S% Start of character generator in ROM.
- SCORE% Total score.
- X () x coordinate of missiles.
- Y () y coordinate of missiles.
- hi () Keeps hi scores.
- NAS () Keeps names of hi scores.
- Z% Sound flag.

PROCEDURES

- lose** Inputs name, calculates and displays hi score, restarts program.
- keys** Checks key pressed, takes appropriate action.
- fire** Fires laser from selected missile base and checks for hits.
- one,two,three** Keeps tabs on number of missiles left.
- win** Called when you destroy all the missiles, prints running score and level number.
- bigchars** Pokes double height characters on to the screen.

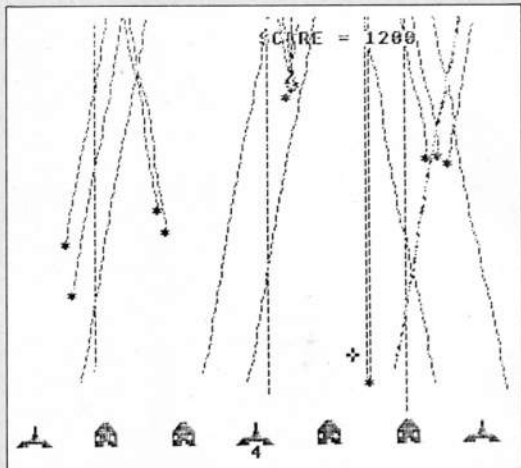
Full listing starts
on Page 18

From Page 17

```

10REM Missile Attack
20REM By M.I.Warman
30REM (c) Electron User
40REM
50ENVELOPE1,2,-15,-8,-3,
10,10,10,126,0,0,-126,126,1
26
60DIMh1Z(10):DIMNA$(10)
70DIMY1(100):X1(100):Z1=
1
80MODE4
90GCOL4,7:VDU23;10,32;0;
0;0;
100GOSUB1720
110#FX12,15
120CLS
130VDU23;10,32;0;0;
140VDU19,7,7;0;
150EX=0
160ENVELOPE2,1,3,-5,2,3,4
,3,126,0,0,-126,126,126
170J1=0:L1=0:N1=0:SCOREX=
0
180VDU23,224,0,0,0,24,24,
24,24,24
190VDU23,225,0,0,0,15,31,
63,127,255
200VDU23,226,0,0,0,224,24
0,240,252,254
210VDU23,227,60,60,126,25
5,255,255,0,0
220VDU23,228,0,0,3,7,15,3
1,63,127
230VDU23,229,0,0,192,224,
240,240,252,254
240VDU23,233,255,255,255,
255,255,255,255,255
250VDU23,238,127,127,79,7
9,127,126,126,126
260VDU23,232,24,24,24,231
,231,24,24,24
270VDU23,231,254,254,230,
230,254,126,126
280PRINTTAB(0,0);" "
290S1=0:D1=0:E1=0
300PRINTTAB(35,30):CHR#22
5;CHR#227;CHR#226;TAB(36,29
);CHR#224
310PRINTTAB(10,30):CHR#22
5;CHR#227;CHR#226;TAB(12,29)
);CHR#224
320PRINTTAB(1,30):CHR#225
;CHR#227;CHR#226;TAB(2,29)
);CHR#224
330PRINTTAB(7,30):CHR#230
;CHR#231;TAB(7,29);CHR#228;
CHR#229

```



```

340PRINTTAB(13,30):CHR#23
0;CHR#231;TAB(13,29):CHR#22
8;CHR#229
350PRINTTAB(24,30):CHR#23
0;CHR#231;TAB(24,29):CHR#22
8;CHR#229
360PRINTTAB(30,30):CHR#23
0;CHR#231;TAB(30,29):CHR#22
8;CHR#229
370PRINTTAB(20,1);"SCORE
= 000"
380VDU5
390GCOL4,3
400V1=500:H1=640:MOVEH1,V
1:PRINTCHR#232
410N1=RND(6)+17+(2*L1)
420IFL1>77THENM1=RND(6)+29
430I1=INT(N1/3):O1=INT(2*
N1/3)
440IFAZ<4THENAZ=4
450AZ=10-L1:BX=10:C1=10
460IFAZ<4THENAZ=4
470FORFX=0TOUN1
480Y1(FX)=RND(1000)+160
490Y1(FX)=RND(140)+1000
500NEXT
510U1=5+(2*L1)
520IFL1>77THENU1=18
530K1=22-(2*L1)
540IFL1>77THENU1=21:K1=6
550REPEAT
560S1=INKEY$(0):IFAS<>"*T
HENPROCkeys
570FORFX=0TOUN1:PL0T69,X1(
FX),Y1(FX):NEXT

```

```

580R1=RND(2)
590IFR1=2THENFORFX=0TOI1:
X1(FX)=X1(FX)+2:NEXT
600R1=RND(2)
610IFR1=1THENFORFX=0TOUN1:
X1(FX)=X1(FX)-2:NEXT
620AS=INKEY$(0):IFAS<>"*T
HENPROCkeys
630FORFX=0TOUN1:Y1(FX)=Y1(
FX)-U1:NEXT
640AS=INKEY$(0):IFAS<>"*T
HENPROCkeys
650FORFX=0TOUN1
660IFY1(FX)<28ANDY1(FX)>K
1THENVDU19,7,5;0;EX=EX+1:S
OUND1,2,10,14*FX:FORGX=0TOI
000:NEXT:VDU19,7,7;0;
670NEXT
680IFFX>EX)=5THENPROCclose
:CLS:GOTO120
690UNTILD1+EX=NX+1
700PROCWin:CLS:GOTO200
710DEFPROCclose:VDU4:PRINT
TAB(7,14);"YOU HAVE BEEN DE
STROYED":VDU19,7,12;0;
720RESTORE2430
730FORFX=0TO6
740READa,b
750SOUND1,-15*ZX,a,b*ZX
:SOUND1,0,0,2*Z1
760NEXT
770FORFX=0TO20000:NEXT
780VDU19,7,7;0;CLS
790UNTIL1=1
800VDU4:PRINTTAB(10,10);"

```

```

YOU HAVE LOST"
810VDU23;10,32;0;0;0;
820PRINTTAB(3,16);"The mi
ssiles fired at your city b
y alien attackers have su
cceeded in their attempts.Y
ou have been unable to stop
enough getting through a
nd have perished along with
the rest of the city"
830SCOREX=SCOREX+S1:PRINT
TAB(3,24);"SCORE = ";SCOREX
840#FX21,0
850IFSCOREX>hi1Z(10)THENP
RINTTAB(3,27);"Input Name "
;INPUTNA$(10):hi1Z(10)=SCOR
EX
855IF LEN(NA$(10))>16THEN
PRINTTAB(14,27);"
";GOTO850
860FORFX=10TO2STEP-1
870IFhi1Z(FX)>hi1Z(FX-1)THE
NPROCsort
880NEXT
890CLS:RESTORE2400
900aZ=ASC30:nZ=0
910REPEAT
920READa#
930IFVALa#>0THENaZ=VALa#
nZ=0:GOTO960
940PROCbigchars(ASC(A#))
950nZ=nZ+0
960UNTILAS="*
970RESTORE2410
980FORFX=0TO5

```


Missile Attack listing

```

999READ, d, SOUND1, -15*Z,      :PRINTTAB(2,31);AZ;VDU5
c,d*4*Z
1000SOUND1,0,10,2*Z
1010NEXT
1020FORFX=1TO10
1030PRINTTAB(8,6+(2*FX));h
iZ(FX);TAB(14,6+(2*FX));".
. .";TAB(20,6+(2*FX));NA*(F
Z
1040NEXT
1050VDU19,7,14;0;
1060PRINTTAB(2,30);"PRESS
'A' TO HAVE ANOTHER GO";
1070AS=GET$
1080IFAS<"^" THEN1070
1090VDU19,7,7;0;
1100ENDPROC
1110END
1120DEFPROCkeys
1130IFAS="B" ORAS="M" ORAS="
M" THENPROCfire:ENDPROC
1140MOVEHX,VZ:PRINTCHR$232
1150IFAS="X" THENHX=HX+70
1160IFAS="Z" THENHX=HX-70
1170IFAS=":" THENVZ=VZ+70
1180IFAS=";" THENVZ=VZ-70
1190MOVEHX,VZ:PRINTCHR$232
1200ENDPROC
1210DEFPROCfire
1220MOVEHX-20,VZ:PRINTCHR$
233;CHR$233
1230MOVEHX-20,VZ+32:PRINTC
HR$233;CHR$233
1240IFAS="B" THENPROCone
1250IFAS="M" THENPROCtwo
1260IFAS="M" THENPROCthree
1270IFWZ=1 THENWZ=0:GOTO137
0
1280SOUND1,1,10,12*Z:VDU1
9,1;0;19,7,4;0;
1290MOVEZX,90:DRAWHX,VX
1300FORFX=0TO1
1310IFABS(XZ(FX)-HX)<47 AN
DABS(YX(FX)-VZ)<47 THEN MO
VEZ(FX)-16,YZ(FX):PRINT"*";
YZ(FX)-40,YZ-DX+1;SZ=SZ+10
0:SOUND1,2,0,5*Z
1320NEXT
1330VDU4:PRINTTAB(20,1);SZ
1340VDU5
1350MOVEZX,90:DRAWHX,VX
1360VDU19;0;0;19,7,7;0;
1370MOVEHX-20,VZ:PRINTCHR$
233;CHR$233
1380MOVEHX-20,VZ+32:PRINTC
HR$233;CHR$233
1390ENDPROC
1400DEFPROCone
14100Z=90
1420IFAZ>0 THENAZ=AZ-1:VDU4
:PRINTTAB(2,31);AZ;VDU5
1430IFAZ=0 THENWZ=1
1440ENDPROC
1450DEFPROCtwo
14600Z=620
1470IFBZ>0 THENBZ=0Z-1:VDU4
:PRINTTAB(19,31);BZ;VDU5
1480IFBZ=0 THENWZ=1
1490ENDPROC
1500DEFPROCthree
15100Z=1160
1520IFCZ>0 THENCZ=0Z-1:VDU4
:PRINTTAB(36,31);CZ;VDU5
1530IFCZ=0 THENWZ=1
1540ENDPROC
1550DEFPROCwin:VDU4
1560VDU23;10,32,0;0;0;
1570VDU19;0;0;19,7,3;0;
1580LZ=LZ+1;JZ=JZ+XZ
1590RESTORE2420
1600FORFX=0TO7
1610READA,b
1620SOUND1, -15*Z,a,b*4*Z
:SOUND1,0,0,1
1630NEXT
1640CL5:VDU4:PRINTTAB(3,9)
;"You have destroyed all the
incoming missiles";
1650SCOREZ=SCOREZ+SZ
1660IFJZ=0 THEN1670 ELSEPRI
NT" apart from ";JZ;" which
got through"
1670PRINT:PRINTTAB(3,11);
;"You now go on to the next l
evel which is level number "
;LZ+1
1680PRINTTAB(10,16);"Score
so far = ";SCOREZ
1690PRINTTAB(10,18);"Score
in last round = ";SZ
1700AFXZ,1,0
1710PRINTTAB(2,30);"Press
any key to continue";6=GET:
VDU19,7,7;0;:ENDPROC
1720REM intro routine
1730RESTORE2390
1740SOUND1,1,10,4*Z
1750nZ=64900:nZ=0
1760REPEAT
1770READA#
1780IFAS=";" THEN1820
1790IFVAL(A#)>0 THENAZ=VAL(A
#):nZ=0:GOTO1820
1800PROCdigchans(ASC(A#))
1810nZ=nZ+8
1820UNTILAS=";"
1830MOVE0,300:MOVE100,300
:PLOT85,550,900
1840MOVE300,450:MOVE800,4
50:PLOT85,550,780

```

```

1050MOVE$300,1000:MOVE$00,1
000:PLOT$5,550,700
1800PRINTTAB(8,30);"Press
any key";
1870REPEAT
1880FORFZ=1T07
1890VDU19,7,FZ;0;
1900FORGZ=0T01800:NEXT
1910NEXT
1920UNTILINKEY$(0)<"*
1930VDU19,7,7;0;
1940MODE1
1950VDU23,18,32,0;0;0;0;
1960COLOUR1;PRINTTAB(13,4)
;"MISSILE ATTACK"
1970COLOUR3
1980PRINTTAB(3,9);"In miss
ile attack you are in charg
e of the defences of your
race's last cityYou have th
ree laser bases each of whi
ch can fire only a certain n
umber of times.You must use
these to destroy incoming
missiles";
1990PRINT" which have been
launched from ahostile ali
en space ship overhead"
2000PRINT" You control t
he firing of the laser bea
ms by positioning a gun sig
ht and selecting a laser
"
2010PRINT""Do you want so
und effects during the ga
me (Y/N)"
2020A$=GET$
2030IFA$="Y"THENZ=1
2040IFA$="N"THENZ=0
2050IFA$<"Y"ANDAS<"N"THE
N 2020
2060COLOUR1
2070COLOUR1
2080PRINTTAB(4,31);"PRESS
ANY KEY TO SEE CONTROLS";
2090B=GET:CLS
2100COLOUR3
2110PRINTTAB(3,5);"You use
the following controls to
move the aiming sight ar
ound the screen:"
2120COLOUR1
2130PRINTTAB(3,9);"Z - Mov
e to left"
2140PRINTTAB(3,11);"X - Mo
ve to right"
2150PRINTTAB(3,13);"* - Mo
ve up"
2160PRINTTAB(3,15);"? - Mo
ve down"

```

```

2170COLOUR3
2180PRINTTAB(3,10);"To fire a shot from each of the three laser bases press the keys B , N , or M"
2190PRINTTAB(3,21);"As you move from screen to screen the missiles become more numerous and they increase in speed.The amount of shots that you have also becomes less."
2200PRINTTAB(3,25);"It takes a total number of five missiles to destroy your city"
2210COLOUR2
2220PRINTTAB(4,31);"PRESS ANY KEY TO START GAME";i:=6:GOTO
2230MODE4
2240RETURN
2250DEFPROCbigchars(a)
2260IFa=-1THENa=32
2270s:=b$000+(a%8)
2280M:=a%Z
2290FORFx:=1TOs%3
2300M%:=F%?:(M%+1)=F%
2310M:=M%+2
2320NEXT
2330M%:=M%+312
2340FORFx:=24TOs%7
2350M%:=F%?:(M%+1)=F%
2360M:=M%+2
2370NEXT
2380ENDPROC
2390DATAi,s,s,i,s,i,l,e, ,A,t,t,a,c,k,i
2400DATAi, , , , ,S,c,o,r,e,s
2410DATA100,1,96, ,75,100, ,25,100,1,96,1,100,2
2420DATA100, ,5,100,1,100,1,100,1,100,1,100,1,100,2
2430DATA60,1,60,1,60,1,56,1,60,1,40,1,40,2
2440DEFPROCsort
2450V:=hi(F)
2460hi(F):=hi(F)-1
2470hi(F)-1:=V
2480N:=N$(F)
2490N$(F):=N$(F)-1
2500N$(F)-1:=N$
2510ENDPROC

```

This listing is included in this month's cassette tape offer. See order form on Page 61.

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Ready Reference

Collect the Electron User Ready Reference charts – and have all the facts at your fingertips!

MODES

The Electron has 7 modes. Five can support both text, letters, and graphics. Two are text only.

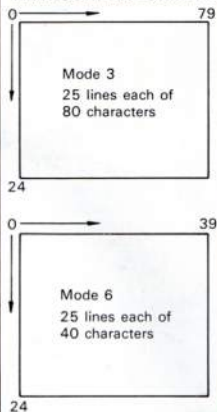
Function	Mode
Graphics	0, 1, 2, 4, 5
Text	3, 6

COLOURS

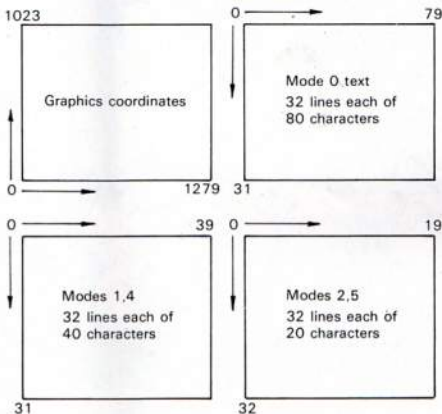
The Electron can have up to 16 colours. 8 flashing, but only Mode 2 allows all 16 on the screen at one time. Other modes have to make do with fewer.

Colours	Mode
2	0, 3, 4, 6
4	1, 5,
16	2






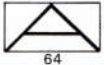
TEXT SCREEN LAYOUTS



GRAPHICS SCREEN LAYOUTS



GRAPHICS MODES SCREEN ATTRIBUTES

Mode	Pixel size	Letter size
0	 4 2	 32 16
1, 4	 4 4	 32 32
2, 5	 4 8	 32 64

Get set, Santa!

By
**STEPHEN
MARTIN**

TO stop all the good (?) little children of the world seeing what gifts they will receive before Christmas Santa hid them all in a vast maze.

During the long summer months some extremely crafty characters have gained illegal entry into the maze and are having a wonderful time playing with presents they don't deserve.

You have to guide Santa through the maze and collect the presents.

But be careful. There is no telling what the frustrated little fiends will do to Santa if they get hold of him.

```
10REM Get Set Santa
20REM By S.Martin
30REM Interrupt Music
40REM By R.A.Waddilove
50REM (C) 1985
60REM Electron User
70MODE$=DIM hiX(10),na$(10):FORTX=ITO10:hiX(TX)=200:na$(TX)="STEVO":NEXT:PROCmusic:PROCcasse
80CLS:PRINTTAB(0,4):"MUSIC?"A:AS=GETS:IFA$="Y":#FX14,4
90VDU23,1;0;0;0;0;0:PROCinstru:ONERRORMODE$=REPORT:PRINT" at line "ERL:END
100PROCtable:linesX=3:scoreX=0:levelX=1
110PROCmusic:RESTORE:PROCinitmaze:PROCinitvar:PROC
```

```
nitgame
120keyX=(levelX+2)+3:LX=LEN(ST$(scoreX)):PROCscreen:PRINTTAB(5,23):"TAB(5,23):keyX:TAB(5,26):livesX:TAB(13,26):levelX:TAB(16-LX,23):scoreX:PROCgame
130DEFPROCcasse:DIM QX 90:FORT=0TOSTEP2:PX=QX:COPT
140.mainloop:LDX#0C3:LDAB1:LDY#0FF:JSR&FFF4:TYA:BN
Epause:JSRghosties:JSRwindw:RTS:.pause:LDAX21:LDX#0:JSR&FFF4:JSR&FFF0:JMPmainloop
150.window:LDX#15:.row:JSRstart:CLC:LDAB70:ADCB90:STAB70:LDAB71:ADCB0:STAB71:LDAB74:CLC:ADCB25:STAB74:LD
```

```
&75:ADCB0:STAB75:DEX:BPLrow:RTS
160.start:LDY#10:.fill:STY&BF:LDAB74:Y:CMPI1:BEQbric:CMPI2:BEQdoor:CMPI3:BEQman:CMPI4:BEQghost:CMPI5:BEQkey:JMPspace:ret:LDY&BF:D
EY:BPLfill:RTS
170.brick:LDAB&A3:STAB72:LDAB&0B:STAB73:JSRpaint:JSRinc:JMPret:.man:LDAB&C3:STAB72:LDAB&0B:STAB73:JSRpaint:JSRinc:JMPret:.doors:LDAB&B3:STAB72:LDAB&0B:STAB73:JSRpaint:JSRinc:JMPret
180.ghost:LDAB&D3:STAB72:LDAB&0B:STAB73:JSRpaint:JSRinc:JMPret:.key:LDAB&E3:STAB72:LDAB&0B:STAB73:JSRpaint:JSRinc:JMPret:.space:LDY#1
```

```
5:.loop2:LDAB0:STAB70:Y:DEY:BPLloop2:JSRinc:JMPret
190.paint:LDY#15:.loop:LDAB72:Y:STAB70:Y:DEY:BPLloop:RTS:.inc:LDAB70:CLC:ADCB16:STAB70:LDAB71:ADCB0:STAB71:RTS
200.moveghost:JSR&AF51:LDAB2A:CMPI200:BCCsmall:JSR&AF51:LDAB2A:STAB83:.small:LDY#0:LDAB82:STAB80:Y:.fg:LDAB83:CMPI200:BCCover:JSRup:.over:CMPI150:BCCover1:JSRdown:.over1:CMPI100:BCCover2:JSRleft:.over2
210CMP#50:BCCcheck:JSRright:.check:LDY#0:LDAB80:Y:CMPI0:BEQnegative:CMPI3:BEQbric:JSRchangedirec:JSR&AF51:LDAB2A:STAB83:JMPend2:.bric
```



VARIABLES

keys%	Number of keys left to collect.
loc%	Location holding the start address of the maze segment currently being printed in the window.
man%	Location of man in maze.
X%	X coordinate of man.
Y%	Y coordinate of man.
xmax%	Maximum distance scrolling can continue right.
ymax%	Maximum distance of downwards scrolling.
xmin%	Minimum distance scrolling can continue left.
ymin%	Minimum distance of upwards scrolling.
score%	Score.
level%	Level reached.
lives%	Number of lives left.

ARRAYS

nm\$()	Holds top 10 names.
hi%()	Holds top 10 scores.

PROCEDURES

assemble	Pokes in machine code.
up	Moves man up and scrolls.
down	Moves man down and scrolls.
left	Moves man left and scrolls.
right	Moves man right and scrolls.
key	Updates the number of keys left and increases score.
screen	Sets up the screen display.
dead	Lose a life. All gone? Hiscore?
table	Prints high score table.
initmaze	Pokes in the maze.
initvari	Initialises variables.
initgame	Sets up memory locations used.
game	Calls the machine code and updates your man until you are dead.
input	Name input routine (uses Osword with A=0).
welldone	Congratulations and increment level.

The Break key definition is corrupted because I have used the page of memory allocated to the function key definitions. Press Escape after Break or Ctrl + Break at the same time then OLD (Return), to enable normal editing. Type in the data carefully otherwise you may have an impossible game.

Get Set Santa listing

```
:LDA#1:STA#7E:RTS
220:negative:LDY#0:LDX#0
0:Y:finish:STA#82:END2:L
DAR#4:LDY#0:STA#80:Y:RTS
230:changedirec:LDAR#83:CM
P#200:BCSdown:CMPI#50:BCSup
:CMPI#100:BCSright:CMPI#50:BC
Sleft:JSR#AF51:LDAR#2A:STA#8
3:RTS:up:SEC:LDAR#80:SBC#25
:STA#80:LDAR#1:SBC#0:STA#81
:RTS
240:down:CLC:LDAR#80:ADC#2
5:STA#80:LDAR#1:ADC#0:STA#8
1:RTS:right:CLC:LDAR#80:ADC
#1:STA#80:LDAR#1:ADC#0:STA#
81:RTS:left:SEC:LDAR#80:SBC
#1:STA#80:LDAR#1:SBC#0:STA#
81:RTS
250:ghosties:LDAR#84:STA#8
8:LDAR#85:STA#81:LDAR#86:STA#
```

```
82:LDAR#87:STA#83:JSRmovegho
st:LDAR#80:STA#84:LDAR#1:STA
#85:LDAR#82:STA#86:LDAR#83:ST
A#87
260:LDAR#88:STA#80:LDAR#89:S
TA#81:LDAR#8A:STA#82:LDAR#8B:
STA#83:JSRmoveghost:LDAR#80:
STA#89:LDAR#1:STA#89:LDAR#82
:STA#8A:LDAR#83:STA#8B
270:LDAR#8C:STA#80:LDAR#8D:S
TA#81:LDAR#8E:STA#82:LDAR#8F:
STA#83:JSRmoveghost:LDAR#80:
STA#8C:LDAR#1:STA#8D:LDAR#82
:STA#8E:LDAR#83:STA#8F
280:LDAR#76:STA#80:LDAR#77:S
TA#81:LDAR#78:STA#82:LDAR#79:
STA#83:JSRmoveghost:LDAR#80:
STA#76:LDAR#1:STA#77:LDAR#82
:STA#78:LDAR#83:STA#79
290:LDAR#7A:STA#80:LDAR#7B:S
```

```
TA#81:LDAR#7C:STA#82:LDAR#7D:
STA#83:JSRmoveghost:LDAR#80:
STA#7A:LDAR#1:STA#7B:LDAR#82
:STA#7C:LDAR#83:STA#7D:RTS
300:music:PHP:PHA:TXA:PHA
:TYA:PHA:LDAR#80:LDX#FA:LD
Y#FF:JSR#FFFA:CPX#10:BNIno
space:LDY#80:LDAR#A,Y:STASou
nd#4:DEY:LDAR#A,Y:STASou
nd#6:LDAR#7:LDX#sound MOD256
:LDY#sound DIV256:JSR#FFF1:
DEC#80:DEC#80:BNEnospace:LD
A#102:STA#8B
310:nospace:PLA:TYA:PLA:T
AX:PLA:PLP:RTS:sound:EQU0#
00000000:EQU0#00000000
320:RTS:J:NEXT:sound#1:so
und#2:-15:#22#music MOD25
6:#22#music DIV256:OSCLI"
FX13,4:#OSCLI"FX16,0:#?#80=
```

```
182:ENDPROC
330:DEFPROCmusic:DIM data
182:RESTORE#950:FORT#18201
STEP-1:READJ1:TX#data#J1:NE
XT:ENDPROC
340:DEFPROCinitmaze:FORT#
87067A:READTX#7#90#DX:NE
XT:FORT#8A3T0#BF2:READD#
DX=EVAL("A"+D#):TX#DX:NEXT
:ENDPROC
350:DEFPROCinitvari:locX#
987:manX#4925:XX#13:YX#2:xx
ax#19:xxmin#7:yyax#12:yyi
n#3:ENDPROC
360:DEFPROCinitgame:#7#80#
C0:#7#1#45A:#7#74#locX MOD 2
56:#7#75#locX DIV 256
370:FORT#87012STEP4:posX#&
```


From Page 23

```

640?manZ:=0:manZ:=manZ+25:1
ocZ:=loc+25:YX:=YX+1:ENDPROC
650DEFFPROCscore:COLOUR12
9:CLS:PRINTTAB(3,20):"GET S
ET SANTA":TAB(3,20):"GIFTS"
:SPC(3):"SCORE":TAB(5,25):"
0":SPC(5):"000000":TAB(3,25)
"LVES":SPC(3):"LEVEL":TAB(
5,26):"3":SPC(7)"0":TAB(5,2
8):"BY STEVO"
660F0RT=ItokeyZ
760posZ:=RND(674):IFposZ%7
900<0:GOTO670
680posZ%7%900=5:NEXT
690ENDPROC
700DEFFPROCkey:keyZ=keyZ-1
:scoreZ:=scoreZ+50:IFkeyZ=0:
PROCWell done:level:=level+1
:160TO110
710L:=LEN(STR$(scoreZ)):P
RINTTAB(5,23):SPC(2):TAB(5,
23):keyZ:TAB(16-LX,23):score
Z:ENDPROC
720DEFFPROCdead:?%74=locX
MOD 256:??%75=locX DIV 256:??
L%0=<0:??%71=5:??manZ:=4:CA
L?and?lives:=livesZ-1:IF
livesZ=0:GOTO740
730?%7E=0:GOTO110
740PRINTTAB(4,8):SPC(11):
TAB(4,9):" GAME OVER":TAB(
4,10):SPC(11):FORT:=TOB0000:
NEXT:IFscoreZ>hiZ(10):PROCI
nput:??%X21,0
750GOTO100
760DEFFPROCintr:CLS:COL
UR2:PROCAess("GET SET SANTA
","3,2):COLOUR1:PROCAess("Z
- LEFT",4,7):PROCAess("X
- RIGHT",4,9):PROCAess("
- UP",4,11):PROCAess("
- DOWN",4,13):PROCAess("
- PAUSE",4,16):COLOUR2
770PROCAess("ANY KEY TO
TART",2,25):G=GET:ENDPROC
780DEFFPROCX(AS,XC,Y,XZ):
LOCALXX,YX,PX,ZX,YZ:XC=XZ:
X=YCZ:ZX=XZ+LENA5:F0RT=Ito
ENAS:YX=XZ+1:F5=MID$(AS,T
):FORPZ:=ZXTOI(STEP-1,PRINT
AB(PX,YZ):F5:NEXT:NEXT:END
ROC
790DEFFPROCtab:COLOUR12
:CLS:COLOUR3:PRINTTAB(4,3)
"BIT GETTERS":COLOUR1:PR
TIFY:F0RT=Ito9:PRINTTAB(1,9)
T3".:nm$(T):TAB(14):hiZ(
):PRINT:NEXT:PRINTTAB(1):
0..nm$(10):TAB(14):hiZ(10)

```

[illegible]

24 ELECTRON USER December 1985

ARE you the proud owner of a Plus 1? If you are then read on. If you aren't go and get yourself one - it's a superb piece of kit and you'll need it to follow this article.

You'll also need a set of joysticks because this month we'll be looking at how to use joysticks in your own programs.

Do you remember the alien programs in the Program Probe feature in the September 1984 and April 1985 issues of *Electron User*.

In the earlier article we used a short program from Ian Rodgers to illustrate how we could control an object's screen movement courtesy of the cursor keys.

The later article used the same program as the basis for one illustrating collision detection. Program 1 shows the result.

This month we'll be adding yet more code to the program allowing the alien to be guided by joystick rather than by cursor keys.

The reason you need the Plus 1 is that the Electron by itself won't support the use of joysticks. You have to have an interface to allow your joysticks to speak to the micro.

The Plus 1 comes with, among other goodies, an analogue interface.

You needn't worry too much about what exactly an analogue interface is. For the purposes of this article it's the thing that you plug your analogue joysticks into!

Notice that you use

PLUS 1

The key to joystick control of your programs

By NIGEL PETERS

analogue joysticks with the Plus 1. Some other interfaces, such as the ones from Power or First Byte, use switched or Atari-style joysticks.

These won't work with the Plus 1, and vice versa, so make sure that you get the correct joystick for your interface.

When you've got your joystick plugged into the analogue port of the Plus 1 the joystick can now "talk" or send signals to the Electron.

And, like everything else inside the computer, it does it using numbers.

It doesn't say "up", it sends a number that stands for "go up". The program must be able to read this number and do the appropriate movement.

You're not just stuck with

one line of communication. The analogue port allows whatever is attached to it to send messages along four different channels should it want to.

It looks at each of these analogue channels in turn, taking information from them and passing it to the Electron in numeric form.

These numbers, which we'll see in a moment, range from 0 to 65280, the values going up in steps of 256 at a time.

Each channel returns a value and the value returned depends on the position of the joystick at the moment that the Electron looks at, or accesses, that channel.

Now if the numbers vary according to what the joystick

```
10 REM PROGRAM II
20 MODE 0
30 VDU 23,1,0;0;0;0;
40 PRINT "Mess about wit
h your joysticks!"
50 REPEAT
60 PRINT TAB(5,0)*ADVAL(
1)*TAB(15,0)*ADVAL(2)*TAB(2
5,0)*ADVAL(3)*TAB(35,0)*ADV
AL(4)*
70 PRINT TAB(0,10) ADVAL
(1),ADVAL(2),ADVAL(3),ADVAL
(4)
80 UNTIL FALSE
```

Program II

is doing, then it's probably occurred to you that if we could get at these numbers from our programs we could use them to control the little alien from Program I.

He could change his position on the screen, his movement depending on what value was returned from a particular channel.

Program II shows how we can use the ADVAL command in Basic programs to read values from the analogue port.

ADVAL(n) returns the value on channel n of the analogue port.

The number n varies from 1 to 4 according to which channel you want to look at. Before you run the program, make sure that you've got your joystick plugged in.

At first all you get is a series of boring numbers, but as you wiggle your joystick about you'll see that these numbers change.

In fact they're varying

```
10 REM PROGRAM I
20 REM COLLISION DETECTI
ON
30 REM BASED ON A PROGRA
M BY IAN RODGERS
40 REM use cursor keys
50 MODE 1
60 VDU23,1,0;0;0;0;
70 VDU23,224,24,60,126,2
19,126,36,66,129
80 X=0
90 Y=0
100 PROCObstacle
110 COLOUR 128
120 REPEAT
130 PROCgame
140 UNTIL check=2
```

```
150 PROCbang
160 REPEAT UNTIL FALSE
170 DEFPROCbang
180 CLS
190 SOUND 0,-15,6,40
200 PRINT TAB(20,15)*BANG*
210 ENDPROC
220 DEFPROCObstacle
230 VDU 24,416;800;600;99
2;
240 GCOL 0,130;CLB
250 ENDPROC
260 DEFPROCgame
270 check=POINT'(X*32+16)
,(1023-Y*32-16))
280 IF check<2 THEN PRIN
TTAB(X,Y)CHR$224
```

```
290 FOR delay=1 TO 100:NE
XT
300 IF INKEY(-122) THEN X
=X+1:PRINTTAB(X,1,Y)*":IF
X=39 THEN X=38
310 IF INKEY(-26) THEN X=
X-1:PRINTTAB(X,1,Y)*":IF X
=-1 THEN X=0
320 IF INKEY(-42) THEN Y=
Y+1:PRINTTAB(X,Y-1)*":IF Y
=31 THEN Y=30
330 IF INKEY(-58) THEN Y=
Y-1:PRINTTAB(X,Y+1)*":IF Y
=-1 THEN Y=0
340 SOUND 1,-15,X,1
350 SOUND 1,-15,32-Y,1
360 ENDPROC
```

Program I

From Page 25

according to the position of the joystick.

Exactly which channel is affected by which joystick movement depends on the joystick you're using. We'll come to that in a moment.

First, however, we'll do something to make the values returned from an ADVAL() more manageable.

You'll remember that I said earlier that the values returned from the channels go up in steps of 256.

I don't know about you, but I find these large numbers rather confusing, so I use DIV 256 to cut them down to size.

I haven't lost any information, just cut the figures down to a more manageable size. Program III shows this in practice:

```
10 REM PROGRAM III
20 MODE 0
30 VDU 23,1,0;0;0;0;
40 PRINT "Notice where t
he 0s and 255s occur"
50 REPEAT
60 PRINT TAB(5,8)"ADVAl(
1)"TAB(15,8)"ADVAl(2)"TAB(2
5,8)"ADVAl(3)"TAB(35,8)"ADV
Al(4)"
70 PRINT TAB(0,10) ADVAl
(1) DIV 256,ADVAl(2) DIV 25
6,ADVAl(3) DIV 256,ADVAl(4)
DIV 256
80 UNTIL FALSE
```

Program III

Now when you wiggle the joystick about you should notice that when the joystick is in its extreme positions of left and right, up and down, the values returned by ADVAL() are 0 and 255.

Again, which position returns which value on which channel depends on your joysticks. Experiment and see.

I use a Voltmace joystick, one of the best around. With this when I run Program III channel 1 returns a value of 0 when the joystick is furthest to the right and 255 when it's at the left.

Channel 2 gives the value of 255 when the stick is turned forward and 0 when it's furthest back.

A little thought shows that these numbers can be used to control the little man. A 0 on

channel 1 means he is to go right, a 255 that he's to go left. Similarly a 255 on channel 2 would have him going upwards, a 0 sending him down.

Program IV spells out what each of the joystick positions does.

```
10 REM PROGRAM IV
20 REPEAT
30 IF ADVAl(1) DIV 256=0
THEN PRINT "Right"
40 IF ADVAl(1) DIV 256=2
55 THEN PRINT "Left"
50 IF ADVAl(2) DIV 256=2
55 THEN PRINT "Up"
60 IF ADVAl(2) DIV 256=0
THEN PRINT "Down"
70 UNTIL FALSE
```

Program IV

Remember, your joysticks may be slightly different. Perhaps right will be a 255 on channel 2 while left would be a 0 on the same channel. Experiment and see.

In case you're wondering what's happened to channels 3 and 4, the answer is that they're not needed with a single joystick.

They are used to take

information from a second joystick. Here, however, we're sticking to just one.

So now that we know what values are returned for the up, down, left and right positions of the joystick, we can use them in our alien program. Program V shows how it's done.

The main difference is that there are three new procedures.

PROCask is fairly straightforward. It just asks if you want to use keys or joysticks to control the little man.

Notice how it's mugged to allow only J, j, K or k as inputs.

If the answer is K or k then the logical variable *key* is set to TRUE and PROCgame will call PROCkey.

If you've read the previous articles then PROCkey should cause you no problems. It's just our old method of using the cursor keys to control the alien's movement. Now the code is put into a procedure instead of being part of PROCgame as it was in Program I.

It's PROCjoy, as you might expect, that uses the joystick to control the little man. It's

not hard to figure out how it works.

Compare the four lines 380 to 410 with the lines 440 to 470 and you'll see how ADVAl() replaces INKEY() in deciding which way the man goes.

With keys the man goes right if the right cursor key is pressed, giving INKEY(-122) as true.

With joystick control the man moves right when the joystick is furthest right, returning 0 from ADVAl(1) DIV 256.

Similarly ADVAl(n) DIV 256 takes the place of INKEY() with the other three directions.

So as you can see, using joysticks with the Plus 1 is quite simple, provided you check out which joystick direction gives which ADVAl() value.

Your joysticks may not be the same as mine. My up might be your down, with disastrous results.

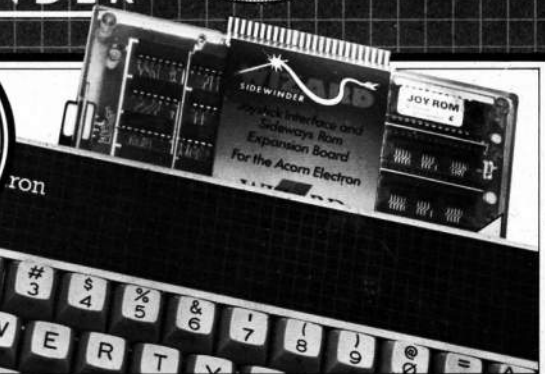
And that's where we'll leave it for this time, although don't be surprised if there's another sighting of aliens, joysticks and the Plus 1 in the near future.

```
10 REM PROGRAM V
20 REM JOYSTICK CONTROL
30 REM BY NIGEL PETERS
40 REM BASED ON A PROGRA
M BY IAN RODGERS
50 REM use cursor keys
60 REM or joystick
70 MODE1
80 VDU23,1,0;0;0;0;
90 VDU23,224,24,0,126,2
19,126,36,66,129
100 I=0
110 Y=0
120 key=FALSE
130 PROCask
140 PROCobstacle
150 COLOUR 128
160 REPEAT
170 PROCgame
180 UNTIL check=2
190 PROCbang
200 REPEAT UNTIL FALSE
210 DEFPROCbang
220 CLS
230 SOUND 0,-15,6,40
240 PRINT TAB(20,15)"BANG"
250 ENDPROC
260 DEFPROCobstacle
270 VDU 24,416;800;600;99
280 GCOL 0,130;CLG
290 ENDPROC
300 DEFPROCgame
310 check=POINT((X+32+16)
,(1023-Y+32+16))
320 IF check<2 THEN PRIN
TTAB(X,Y)CHR#224
330 IF key=TRUE THEN PROC
key ELSE PROCjoy
340 SOUND 1,-15,X,1
350 SOUND 1,-15,32-Y,1
360 ENDPROC
370 DEF PROCjoy
380 IF ADVAl(1) DIV 256=0
THEN X=X+1:PRINTTAB(X-1,Y)
390 IF ADVAl(1) DIV 256=2
55 THEN X=X-1:PRINTTAB(X+1,
Y)
400 IF ADVAl(2) DIV 256=2
55 THEN Y=Y-1:PRINTTAB(X,Y+
1)
410 IF ADVAl(2) DIV 256=0
THEN Y=Y+1:PRINTTAB(X,Y-1)
420 ENDPROC
430 DEF PROCkey
440 IF INKEY(-122) THEN X
=X+1:PRINTTAB(X-1,Y)
450 IF INKEY(-26) THEN X=
X-1:PRINTTAB(X+1,Y)
460 IF INKEY(-42) THEN Y=
Y+1:PRINTTAB(X,Y-1)
470 IF INKEY(-58) THEN Y=
Y-1:PRINTTAB(X,Y+1)
480 ENDPROC
490 DEF PROCask
500 INPUT "Do you want to
use keys or joystick? K/J
" answer$
510 IF INSTR("JjKk",answe
r$)=0 THEN GOTO 500
520 IF answer$="K" OR ans
wer$="k" THEN key=TRUE
530 CLS
540 ENDPROC
```

Program V

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Beginners



LAST month we learnt about the Basic functions **LEFT\$** and **RIGHT\$**. They were used to take specified numbers of characters from the left and right ends of strings respectively.

We also saw how they could be used to extract information held in the fields of a data string, but found they had limitations.

Have a look at the animal data held in Figure 1 and you'll see what I mean.

NAME	SPECIES	AGE	WEIGHT
TOM	CAT	3	7
IAN	RAT	2	1
ERIC	BAT	1	1

Figure 1: Animal data

If we try holding all the information about Tom the cat, Ian the rat and Eric the bat in three data strings we run into trouble when we want just part of the data, not all of it.

Take a look at Program 1, which uses **LEFT\$** to extract the name and species of the animals held in the data statements.

By now you should have no difficulty in figuring out how the program works.

It stores the three data strings in the array **record\$**. It then uses **LEFT\$** to extract the

```
10 REM PROGRAM 1
20 DIM record$(3)
30 FOR loop=1 TO 3
40 READ record$(loop)
50 NEXT loop
60 FOR loop=1 TO 3
70 PRINT LEFT$(record$(loop),8)
80 NEXT loop
90 DATA "TOM CAT 3 7"
100 DATA "IAN RAT 2 1"
110 DATA "ERIC BAT 1 1"
```

Program 1

Let's round up the livestock with a few **LEFT\$**, **RIGHT\$** and **MID\$**

necessary information from the relevant array element each time round the loop.

Try modifying the program to get the species, age and weight. You should have no trouble if you use **RIGHT\$**.

However you will have trouble trying to get just a name and age or a species and weight using **LEFT\$** and **RIGHT\$**. Try it and see.

The problem arises because of the way the data is stored in the data strings.

Each string holds four pieces of information, each piece of information held in one of four fields.

Each of these fields is made up of a fixed number of characters, the whole data string consisting of 12 characters.

The first four characters are set aside for the animal's name, then a space, then three characters for the species, a space, the age, another space and then the weight. Figure 11 shows this in detail.

Strictly speaking we don't need the spaces between the fields, they're just there to make it more legible.

However we do need them to pad out a field if the information in it doesn't fill all the allocated spaces. In this case the name fields are four characters long.

However Ian and Tom are only three letters apiece. The



result is that a space is put in as character 1 to make the field the required length.

Using this method and **LEFT\$** and **RIGHT\$** it's easy to break off one or more fields from either end of a data string. But you can't get at the middle ones by themselves. You have to include the information at either end.

LEFT\$ and **RIGHT\$** are useful functions, but they're a bit clumsy. They'll take a specified number of characters from each end of a string but not from the middle.

And when we've got several bits of information in a string, often it's only the middle bits we want.

Of course there is a way

round all of this that avoids having to use string slicing at all. We can just store all the information we want in a number of arrays. Then we can pick and choose between arrays as necessary. Program 11 shows how it's done.

As you can see it works, giving us the species and weight for each of the animals, something we were unable to do before.

Try adjusting line 70 so it gives you the name and age of the animals. It's quite a flexible program.

The trouble is that it uses four arrays. In this case it's all right, but in practical applications using lots of records containing lots of different

Character position	1	2	3	4	5	6	7	8	9	10	11	12
Data		T	O	M		C	A	T		3		7
		I	A	N		R	A	T		2		1
		E	R	I	C		B	A	T		1	1

Figure 11: Character positions of record\$(1)



```

10 REM PROGRAM 11
20 DIM name$(3),specie$(
3),age(3),weight(3)
30 FOR loop=1 TO 3
40 READ name$(loop),spec
ie$(loop),age(loop),weight(
loop)
50 NEXT loop
60 FOR loop=1 TO 3
70 PRINT name$(loop)" th
e "specie$(loop)" weighs ";
weight(loop)" pound."
80 NEXT loop
90 DATA TOM,CAT,3,7
100 DATA IAN,RAT,2,1
110 DATA ERIC,BAT,1,1

```

Program 11

pieces of information, these arrays grow and grow.

So memory becomes limited and the method impractical.

Now our previous method of storing information in the fields of a data string is very efficient in its use of memory, but not so flexible.

Wouldn't it be nice if there were a Basic command that allowed you to pick a number of characters from anywhere in a string, rather than having to start at either end as we had to with LEFT\$ and RIGHT\$?

In fact, we can do just that using the function MIDS. To see how it works, enter:

```
PRINT MIDS("anystrings",4,6)
```

and you'll be rewarded with:

string

What's happened is that the MIDS function has sliced off part of the string that you've given it in the brackets. The numbers following this string tell the micro where to start the slicing and how many characters it is to slice off.

In this case the string is *anystrings*. The figure 4 tells

the Electron to start slicing at the fourth character from the left, in this case an s.

The final figure tells it how many characters to take. Here it's 6, so we end up with:

string

Try doing that with LEFT\$ or RIGHT\$. As you can see, MIDS allows us to take a number of characters from the middle of a string.

It's just what we need to get at the fields locked in the middle of a data string. Before we go on to that however, try playing around with MIDS until you feel you understand it well.

Can you explain why:

```
PRINT MIDS("anystrings",2,5)
```

produces:

nysr

as its result?

You can use variables inside MIDS. Enter:

```

string$="balloon"
beginning=2
length=3
PRINT MIDS(string$,
beginning,length)

```

and you'll see that it's the same as:

```
PRINT MIDS("balloon",2,3).
```

What happens if you ask MIDS to give you more characters than there are left in the string? Try it and see.

```
PRINT MIDS("pqrst",3,7)
```

seems to be asking for seven characters from "pqrst", starting at the letter r. The trouble is that, including the r, there are only three characters left in the string.

As you'll have seen if you typed it in, the Electron just gives you as many letters as there are remaining in the

string and leaves it at that.

What happens if you leave out the last number? What will you get if you enter:

```
PRINT MIDS("abcde",2)
```

You've told the Electron you want to take some characters from "abcde". You've also told it where to start, at the second character, the letter b.

What you haven't said is how many you want. In this case, as before, the Electron just assumes that you want the rest of the string and gives you:

bcde

for your pains.

So, now we've got three ways of slicing strings. Without using your Electron, can you predict what the results of entering:

```

PRINT MIDS("1234",2)
PRINT LEFT$("1234",2)
PRINT RIGHT$("1234",2)

```

will be? And can you explain the differing output?

As we saw before, we can use variables inside the brackets of a MIDS. This can be very useful and gives us a very powerful method of slicing strings. Program 11 shows this in action.

Here the FOR ... NEXT loop cycles seven times. Each time round the loop the MIDS

```

10 REM PROGRAM 111
20 whole$="abcdefg"
30 FOR start=1 TO 7
40 PRINT MIDS(whole$,sta
rt,1)
50 NEXT start

```

Program 111

operates on *whole\$*, taking one character from it.

Which character is taken depends on the value of the loop control variable *start*. Try altering the program so that it takes two or three letters at a time.

```

10 REM PROGRAM IV
20 whole$="abcdefg"
30 FOR slice=1 TO 7
40 PRINT MIDS(whole$,1,s
lice)
50 NEXT slice

```

Program IV

In contrast, Program IV uses MIDS to take progressively larger numbers of letters from *whole\$*.

As the loop control variable *slice* increases in value, so more characters are taken from *whole\$*. However the slicing always starts from the first character. The result is:

```

a
ab
abc
abcd
abcde
abcdef
abcdefg

```

Now doesn't this remind you of something? Can you use the same program to produce such a triangle of asterisks? All you have to do is to change line 20 to:

```
20 whole$="*****"
```

and you have one. Use a decreasing STEP to produce a decreasing triangle.

But what of the reverse images of the above triangles?

```

10 REM PROGRAM V
20 asterisk$="*****"
30 length=LEN(asterisk$)
40 FOR loop=1 TO 8
50 line$=STRING$(length-
loop,CHR$(32))+MIDS(asteri
sk$,1,loop)
60 PRINT line$
70 NEXT loop

```

Program V

Program V makes use of MIDS

Beginners

From Page 29

and `STRINGS` to produce one of them.

The heart of the program lies in line 50. This takes a number of spaces and a number of asterisks and joins them into one string *line\$*. This is then printed out by the next line.

Each time round the loop there is one less space and one more asterisk. The result is:

●
●●
●●●
●●●●
●●●●●
●●●●●●
●●●●●●●
●●●●●●●●

Can you alter the program to produce:

[illegible]

Tearing ourselves away from triangles of asterisks, let's have a look at Program VI. If you find the output rushes

```

10 REM PROGRAM VI
20 whole$="abcdefg"
30 FOR start=1 TO 7
40 FOR slice=1 TO 7
50 PRINT MID$(whole$,start,slice)
60 NEXT slice
70 NEXT start

```

Program VI

past too quickly, use the Ctrl and Shift keys to hold things up.

This listing is a combination of Programs III and IV. Now the MIDS lies at the heart of a pair of nested FOR ... NEXT loops.

Notice that the control variables of these loops, *start* and *slice* are both used in the MID\$.

As you can see from Program VI's output, MID\$ is

a very powerful function, especially when used with loops.

So let's see how we can use it to solve our original problem.

Program VII, though a little inflexible, gives us what we

```

10 REM PROGRAM VII
20 DIM record$(3)
30 FOR loop=1 TO 3
40 READ record$(loop)
50 NEXT loop
60 FOR loop=1 TO 3
70 PRINT MID$(record$(loop),6,3); " *MID$(record$(loop),12,1)
80 NEXT loop
90 DATA " TOM CAT 3 7"
100 DATA " IAN RAT 2 1"
110 DATA " ERIC BAT 1 1"

```

Program VII

want, allowing us access to any of the fields in *record\$()*.

Line 70 is the one to understand. The first MIDS takes three characters, beginning at the sixth character in. This is the species field.

The second MIDS takes one character, starting at the twelfth position. This is the weight field.

When the final loop has finished, the program displays:

CAT	7
RAT	1
BAT	1

the species and weight fields
we were unable to get at, or
access, before. Changing line
70 to:

```
70 PRINT MID$(records$(loop),1,4); " "MID$(records$(loop),10,1)
```

gives us:

TOM	3
IAN	2
ERIC	1

the elusive name and age fields.

However while Program VII may show how MID\$ solves our previous problems, it's still a bit inflexible.

If I want to display a different combination of fields from a data string, a program line has to be changed.

Surely it would be better if the program had the Electron asking me which combination of fields I want to see? Program VIII does this.

I leave this to you to figure out as your "homework". Don't worry though, there's nothing in it that we haven't covered already.

It's just a bit longer than our normal examples, and so looks more formidable. However, if you take it step by step, you should have no problems.

And when you've done that, can you improve it? I'm not too

happy with the inputs. Could they be better mugtrapped?

And could our method of storing information in a data string be made more efficient? After all, we're wasting spaces in the name fields.

And what if our animals didn't all belong to convenient three letter species? What if it were Eric the aardvark or Tom the tarantula?

● We'll meet the answers to some of these questions next time as we look inside strings with INSTR.



```

10 REM PROGRAM VIII
20 REM *****
30 DIM records(3)
40 FOR loop=1 TO 3
50 READ record$(loop)
60 NEXT loop
70 REM *****
80 INPUT "Do you want names? Y/N " test$
90 IF test$="Y" OR test$="y" THEN name=TRUE ELSE name=FALSE
100 INPUT "Do you want species? Y/N " test$
110 IF test$="Y" OR test$="y" THEN species=TRUE ELSE species=FALSE
120 INPUT "Do you want age? Y/N " test$
130 IF test$="Y" OR test$="y" THEN age=TRUE ELSE age=FALSE
140 INPUT "Do you want weight? Y/N " test$
150 IF test$="Y" OR test$="y" THEN weight=TRUE ELSE weight=FALSE
160 REM *****
170 FOR loop=1 TO 3
180 IF name THEN PRINT MID$(record$(loop),1,4) " ";
200 IF species THEN PRINT MID$(record$(loop),6,3) " ";
210 IF age THEN PRINT MID$(record$(loop),10,1) " ";
220 IF weight THEN PRINT MID$(record$(loop),12,1) " ";
230 PRINT:PRINT
240 NEXT loop
250 REM *****
260 DATA " TOM CAT 3 1"
270 DATA " IAN RAT 2 7"
280 DATA " ERIC BAT 1 1"

```

Program VIII



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SPACE COUNT

By
**STEVE
LUCAS**

SPACE Count is a simple educational game aimed at five to seven year olds.

When the program is run a number of coloured objects will be displayed on the screen and the aim is to count them.

To make life a little more exciting the counting must be done before Cedric flies his plane across the bottom of the screen.

Each correct answer makes Cedric fly his plane faster, making the next question more difficult.

If very young children are playing you may want to remove this by deleting the end of line 1290.

Each wrong answer makes Cedric slow down for the next question.

Two attempts are given for each question and the child has three lives in each game.

The game was written for the Electron. If it is run on the BBC Micro Cedric will fly across the screen far too fast and you should make the changes suggested in line 130.



PROCEDURES

setup	Chooses random numbers and stores this in the array.
game	Main control loop.
highscore	Deals with end of game.
top	Defines top window.
middle	Defines middle window.
bottom	Defines bottom window.
tries	Allows you to answer the question.
get	Tests the keyboard input.
win	Correct answer.
close	Wrong answer.
error	Error handling.
move	Move plane.

MAIN VARIABLES

S%	Score.
lives%	Number of lives.
U%	Position of plane.
col%	Colour.
V%	Random number.
X%, Y%	General variables.
gra\$	Graphics.
A\$	Keyboard input.
B\$	String value of answer.
ans%	Correct answer.
col\$(X)	Words for the numbers.
val\$(x,y)	Array to hold positions for screen locations.
speed%	Speed of game.
try%	Attempt.
guess%	Answer selected.

Full listing starts
on Page 34

From Page 33

10 REM ** Space Count **
20 REM ** an educational
program for 5-6 year olds
**

30 REM ** by Steve Lucas

**

35 REM (c) Electron User

40 ON ERROR MODE6:PROCer

ror

50 MODE6:VDU19,0,4,0,0,0

60 *FX210,0

70 PRINTTAB(14,2)*Space

Count**"SPC2"by Steve W. Lu

cas for Electron User"

80 REM ** sound on or of

f **

90 PRINTTAB(6,10)"Do you

want sound (Y/N) ?":

100 REPEAT:AF=GET\$:UNTIL

INSTR("YyNn"),AF:IFA\$="N"OR

AF\$="n"THEN*FX210,1

110 REM ** set variables

**

120 livesX=3:DIM col\$(40)

,val\$(10,4):FOR X=0 TO 40:

EADcol\$(X):NEXT X:speedX=30

:UX=0:SZ=0

130 REM **change the valu

e of speedX to 100 in line

120 on the BBC micro **

140 DATA zero,one,two,thr

ee,four,five,six,seven,eigh

t,nine,ten,eleven,twelve,th

irteen,fourteen,fifteen,six

teen,seventeen,eighteen,nin

eteen,twenty

150 DATA twenty one,twent

y two, twenty three, twenty

four, twenty five, twenty si

x, twenty seven, twenty eight

, twenty nine

160 DATA thirty, thirty on

e, thirty two, thirty three, t

hirty four, thirty five, thir

ty six, thirty seven, thirty

eight, thirty nine, forty

170 REM ** define graphic

s characters **

180 VDU23,224,0,120,143,2

41,255,127,3,2

190 VDU23,225,0,0,0,8,232

,252,0,0

200 VDU23,226,1,3,3,15,

25,56,58

210 VDU23,227,192,224,224

,224,248,284,14,174

220 VDU23,228,0,0,15,24,1

27,255,24,24

230 VDU23,229,0,0,192,48,

252,255,24,24

240 VDU23,230,1,1,1,1,255

,127,63,31

250 VDU23,231,128,224,0,0,

,255,254,252,248

260 VDU23,232,0,0,224,240

,24,12,15,15

270 VDU23,234,0,0,0,0,0,0,

,252,0,7

280 VDU23,235,15,15,12,24

,240,192,0,0

290 VDU23,236,0,7,252,0,0,

0,0,0,0

300 VDU23,237,1,3,2,3,7,

6,7,6

310 VDU23,238,128,192,64

,192,224,96,224,96

320 VDU23,239,7,6,6,14

,12,24,24

330 VDU23,240,224,224,96

,96,112,48,24,24

340 plane\$=CHR\$224+CHR\$22

5:lives\$=CHR\$226+CHR\$227:ca

r\$=CHR\$228+CHR\$229:boat\$=CH

R#230+CHR\$231

350 ship\$=CHR\$232+CHR\$23

4+CHR\$10+CHR\$0+CHR\$0+CHR\$23

5+CHR\$236:ship2\$=CHR\$237+CH

R#238+CHR\$10+CHR\$0+CHR\$0+CH

R#239+CHR\$240

360 REM ** define envelop

es **

370 ENVELOPE 1,1,1,0,0,20

0,0,0,126,0,0,-126,126,126

380 ENVELOPE 2,1,-7,7,0,1

0,10,0,126,0,0,-126,126,126

390 ENVELOPE 3,4,90,-15,-

15,10,20,28,126,0,0,-126,12

6,126

400 REM ** instructions *

410 MODE1:COLOUR 233:CLS:

FOR X=5 TO 35 STEP 4:PRINT

AB(X,4):cars\$=PRINTTAB(X,28)

:cars\$=NEXT:VDU28,10,20,30,1

0:COLOUR 200:CLS

420 PRINTSPC5:"Space Cou

nt":SPC5:STRING\$(12,"="):VD

U23,1,0,0,0,0:

430 COLOUR 2:PRINT" You a

ust count the coloured o

bjects before Cedric get

s" SPC9:"home."

440 COLOUR 3:PRINT" You ha

ve only 3 lives":COLOUR1:P

RINT"Press the <Space Bar>

":*FX15,0

450 REPEAT UNTIL GET=32:M

ODE1:PROCtop

460 REPEAT

470 PROCsetup

480 PROCgame:UX=0

490 UNTIL livesX<1

500 PROChighscore

510 RUN

520 END

530 REM ** define array c

ontaining answers **

540 DEFPROCsetup

550 VZ=RD(4):IFVZ=1THENS

hip\$="cars":qra\$=car\$ELSEIF

VZ=2THENship\$="boats":qra\$=

boat\$ELSEIFVZ=3THENship\$="r

ockets":qra\$=ship1\$ELSEship

\$="spaceships":qra\$=ship2\$

560 ansZ=0:FORIX=1TO10:FO

RYI=1TO4:val\$(IX,YZ)=0:NEXT

YZ,IX

570 EZ=0:REPEAT:FORXI=1TO

10:FORXI=1TO4:CZ=RD(5):IFC

Z=1THENval\$(IX,YZ)=1:EI=1:a

nsZ=ansZ+1

580 NEXTYZ,IX:UNTILEI=1:c

olZ=RD(5):IFcolZ=1THENCZ=4

:col\$="blue"ELSEIFcolZ=2THE

NCZ=1:col\$="red"ELSEIFcolZ=

3THENCZ=3:col\$="yellow"ELSE

IFcolZ=4THENCZ=2:col\$="gree

n"ELSECX=5:col\$="purple"

590 PROCmiddle:CLS:VDU19,

2,CX,0,0,0

600 FORXI=1TO10:FORXI=1TO

4:IFval\$(IX,YZ)=1THENPRINT

AB(XI#4,X,YI#4):qra\$

610 NEXTYZ,IX

620 PROCbottom:CLS:PRINT

AB(2):"How many ":col\$:SPC1

:ship\$: are there ?":

630 ENDPROC

640 DEFPROCtop

650 VDU28,0,7,39,0:COLOUR

131:COLOUR 0

660 ENDPROC

670 DEFPROCmiddle

680 VDU28,0,28,39,0:COLOU

R128:CLS:COLOUR 2:ENDPROC

690 DEFPROCbottom

700 VDU28,0,31,39,29:COLO

UR131:COLOUR 1:ENDPROC

710 DEFPROCgame

720 PROCtop:CLS

730 VDU23,1,0,0,0,0:

740 PROCtries

750 COLOUR 1:PRINTTAB(13,

5):"Your answer ="

760 BS="":IX=1

770 PROCget

780 ENDPROC



```

790 DEFPROCget
800 trvX=0
810 REPEAT
820 REPEAT
830 AS=INKEY$(0)
840 TX=TX+1:IF TX>speedX
THEN SOUND 1,2,0,5:PROCmove
:PROCTop
850 IF AS<CHR$(13) AND (
AS<"0" OR AS<"9") THEN AS=""
*
860 IF UX>35 THEN trvX=3:
BS=BS+*
870 BS=BS+AS
880 COLOUR 0:PRINTTAB(27,
5):BS
890 UNTIL AS=CHR$(13) OR
LEN(BS)>1
900 guessX=VAL(BS)
910 IFguessX=ansX THEN tr
vX=9
920 trvX=trvX+1:PROCTop:C
LS:PRINTTAB(14):IFUX>34THE
NPRINT*:GOTO940
930 IFtrvX=10THENGOTO990E
LSEPRINT*That was wrong.*
940 IF trvX<4 THEN COLOUR
1:PRINT"SPC3:" Press the
<Space Bar> to continue.*
950 *FX15,0
960 IF trvX<4 THEN REPEAT
UNTILGET=32
970 AS="":BS=""
980 IF trvX<2 PROCTries
990 UNTIL trvX=1
1000 IFtrvX=10THENPROCNin:
ENDPROC
1010 livesX=livesX-1:PROC
lose:ENDPROC
1020 END
1030 DEFPROCmove
1040 PROCbottom:PRINTTAB(U
X,2):* ":UX=UX+1:PRINTTAB
(UX,2):planeX:TX=0
1050 ENDPROC
1060 DEFPROCTries
1070 PROCTop:CLS:PRINTTAB(
11,2):*Lives Left ":STRING
$(livesX,livesX)
1080 COLOUR 1:PRINTTAB(13,
5):*Your answer =*
1090 ENDPROC

```

```

1100 DEFPROCclose
1110 speedX=speedX+10:REM
** slow game down for wrong
answer **
1115 *FX15,0
1120 PROCTop:CLS:COLOUR 0:
IFUX>34 THEN PRINT TAB(10)
:"You were too slow!"
1125 SOUND 1,3,-15,15
1130 COLOUR 1:PRINT"TAB(8)
:"There were ":PRINTTAB(8)c
ol$(ansX):SPC1:ship$:"":COLO
UR 0:PRINT" Press the
<Space Bar> to continue.*
1135 REPEAT UNTIL GET=32
1140 ENDPROC
1170 DEFPROChighscore
1180 PROCTop:CLS:COLOUR1:P
RINTTAB(8,2):*You have scor
ed ":SX
1190 COLOUR 0:PRINT"" Pr
ess the <Space Bar> for ano
ther game.*
1200 *FX15,0
1210 REPEAT UNTIL GET=32
1220 ENDPROC
1230 DEFPROCwin
1240 SX=SX+1:FX15,0
1250 PROCTop:CLS:COLOUR 1:
PRINT"TAB(8):Well done.*
TAB(8):*There were ":col$(a
nsX):SPC1:ship$:"":COLO
UR 0:PRINT" Press the <Space
Bar> to continue.*
1260 SOUND 1,3,100,10
1270 *FX15,0
1280 REPEATUNTILGET=32
1290 ansX=0:speedX=speedX-
5:REM ** speed game up if a
nswer correct **
1300 ENDPROC
1310 DEFPROCerror
1320 CLS:PRINT"":*REPORT:
PRINT" at line ":ERL
1330 END

```

This listing is included in this month's cassette tape offer. See order form on Page 61.

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... An excellent mixture of games ... Personal Software - Autumn 1983.

EDUCATIONAL 2

BBC/ELECTRON

Table £6.95 Disc £8.95

Although similar to Educational 1 this tape is more advanced and aimed at seven to twelve year olds. The tape includes MATH 1, MATH 2, AREA, MEMORY, CUBE/COUNT and SPELL.

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BBC/ELECTRON

Table £6.95 Disc £8.95

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These are excellent programs which teachers on the project have no hesitation in recommending to other teachers. ... Computers in Classroom Project.

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... Very good indeed ... A&B Computing - Jan/Feb 1984

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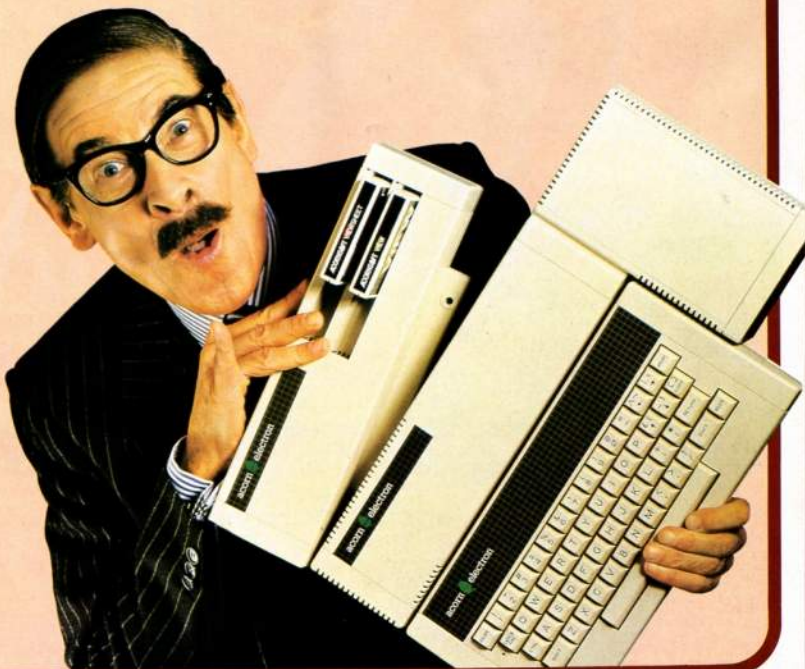
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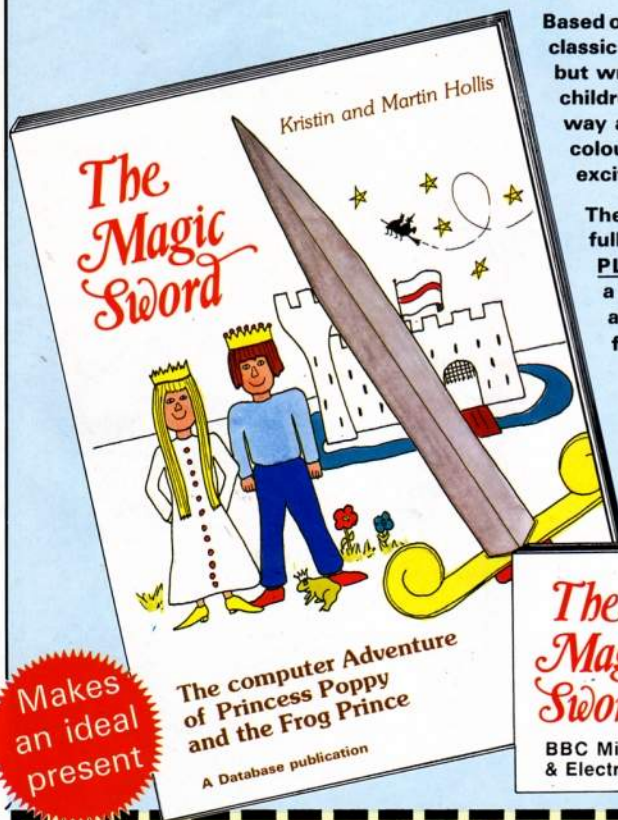
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on Page 61



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Make it a Merry Micro Christmas



WHY not send the Electron fans among your family and friends an Electronic Christmas card?

This program creates a lovely graphic display to the accompaniment of some festive tunes and gently falling snow. There's even a snowman and a Christmas tree decorated with colourful fairy lights.

Of course you'll want to personalise your card. Line 40 holds the key. Place your name in *from\$* and the recipient's in *toS*.

When the card has been drawn, pressing the Q key will switch the carols off. S will switch them back on.

PROCEDURES

- | | |
|-------------------|--|
| assemble | Assembles a short machine code routine to play the carols. |
| snow | Draws the snow. |
| chars | Defines the characters. |
| bell (E,F) | Prints a bell. |
| move | Moves the snow by redefining the colours. |

```

10 REM Christmas Card
20 REM D.W.Davies
30 REM (c) Electron User
40 to="ELECTRON USER":f
roms="D.W.Davies":REM Names
of sender or receiver must
not exceed 16 spaces
50 ON ERROR GOTO 2290
60 MODE1
70 VDU23,1,0,0,0,0:
80 PROCIntro
90 PROCStoredata
100 PROCassemble
110 PROCchars
120 MODE2
130 VDU5:GCOL0,134:CL6
140 PROCsnow
150 PROCcorners
160 RESTORE2210:FOR NX=1
TO 4:READ EX,FX:PROCSanta(E
%,FX-4):NEXT
170 PROCbell1(E,F)
180 PROCsm
190 PROCsanta(128,832):PR
OCsanta(1024,832)
200 PROCtree
210 PROCto:PROCch:PROCfro
m
220 PROCmove
230 END
240 DEFPROCchars
250 VDU23,224,3,7,15,31,3
1,31,0,0
260 VDU23,225,224,240,252
,224,240,240,0,0
270 VDU23,226,0,4,4,1,1,0
,0,3
280 VDU23,227,0,32,32,128
,128,0,0,192
290 VDU23,228,0,0,0,0,0,0
,63,63
300 VDU23,229,0,2,2,0,0,0
,252,252
310 VDU23,230,16,16,16,16
,24,25,31,28
320 VDU23,231,8,8,8,8,24,
152,240,56
330 VDU23,232,31,31,31,15
,15,7,7,3
340 VDU23,233,240,240,248
,240,248,224,224,192
350 VDU23,234,15,43,43,46
,6,6,0,3
360 VDU23,235,240,212,212
,116,96,96,0,192
370 VDU23,236,2,7,7,2,0,0
,0,0
380 VDU23,237,240,240,240
,240,240,240,240,240
390 VDU23,238,1,2,4,4,4,8
,0,8
400 VDU23,239,128,64,32,3
2,32,16,16,16
410 VDU23,240,16,16,16,32
,64,127,2,1
420 VDU23,241,8,8,240,4,2
,254,64,128
430 VDU23,242,0,1,3,3,3,7
,7,7
440 VDU23,243,0,128,192,1
92,192,224,224,224
450 VDU23,244,15,15,0,31,
63,0,1,0
460 VDU23,245,240,240,0,2
48,252,0,128,0
470 VDU23,247,66,102,60,2
4,0,0,0,0
480 VDU23,248,126,60,60,6
0,60,60,189,126
490 VDU23,249,64,64,224,6
4,64,0,0,0
500 bellone$=CHR$238+CHR$
239+CHR$8+CHR$8+CHR$10+CHR$
240+CHR$241
510 belltwo$=CHR$242+CHR$
243+CHR$8+CHR$8+CHR$10+CHR$
244+CHR$245
520 red$=CHR$224+CHR$225+
CHR$8+CHR$8+CHR$10+CHR$226+
CHR$227
530 white$=CHR$228+CHR$22
9+CHR$8+CHR$8+CHR$10+CHR$23
0+CHR$231+CHR$8+CHR$8+CHR$1
0+CHR$232+CHR$233
540 yell$=CHR$10+CHR$234+C
HR$235
550 ENDPROC
560 DEFPROCintro
570 COLOUR1:PRINTTAB(13,7
)"CHRISTMAS CARD":TAB(13,9)
"By D.W.Davies"
580 COLOUR2:PRINTTAB(6,15
)"When Card has been drawn:
"
590 COLOUR3:PRINTTAB(6,18
)"Pressing 'O' will end Car
ols":TAB(6,20)"Pressing 'S'
will start them again"
600 COLOUR1:PRINTTAB(12,2
6)"Press 'SPACE BAR'"
610 REPEAT UNTIL GET=32
620 ENDPROC
630 DEFPROCtri(OX,PX,size
X)
640 VDU25,4,OX:PX:25,0,si
zeX:-sizeX/2:25,0,-sizeX*2:
0:25,0,1:sizeX:sizeX:
650 ENDPROC
660 DEFPROCtree:VDU18,0,2
:25,4,630:75:25,4,650:75:25
,85,630:0:25,85,650:0:18,0,
1:25,4,688:28:248:18,0,2:
670 OX=640:PX=150
680 FOR sizeX=150 TO 50 S
TEP -25
690 PROCtri(OX,PX,sizeX)
700 PX=PX+40:NEXT
710 FOR IX=1 TO 40
720 GCOL0,RND(2)+3
730 OX=RND(300)+490:RX=RN
D(260)+75:IF POINT(OX,RX)<
2 GOTO 730
740 VDU25,4,OX-RX:RX+249
:
750 NEXT
760 ENDPROC
770 DEFPROCsnow
780 FOR IX=0 TO 1279 STEP
50
790 colZ=RND(8)+7:downZ=-
20
800 PLOT4,XX,RND(32)+1012
810 FOR NX=0 TO 51
820 IF colZ>15 POINT(IX,8:down
Z=-RND(15)+15)
830 VDU18,0,colZ,25,0,-(R
ND(5)+5):downZ:236,8
840 colX=colZ+1:NEXT NX
850 NEXT IX
860 FOR CX=0 TO 15
870 VDU19,CX,6,0,0,0,0
880 NEXT
890 ENDPROC
900 DEFPROCmove
910 Y6Z=12
920 REPEAT
930 FOR NX=1 TO 15
940 FOR CX=0 TO 15
950 CXZ=CXZ-1:IF CXZ=8 CX
Z=15
960 VDU19,CXZ,7,0,0,0,19,
CXZ,6,0,0,0
970 changeZ=RND(2)+3
980 VDU19,changeZ,RND(7),
0,0,0
990 soundX=INKEY(15)
1000 IF soundX=0 THEN *FX
13,4
1810 IF soundX=83 THEN *FX
14,4
1820 IF Y6Z>60 Y6Z=12
1830 VDU18,0,7,25,4,RND(98
0)+96:Y6Z:236
1840 NEXT
1850 NEXT
1860 Y6Z=Y6Z+16
1870 UNTIL FALSE
1880 ENDPROC
1890 DEFPROCsanta(XX,YY)
1100 VDU18,0,1,25,4,XX:YY:
:PRINTres
1110VDU18,0,7,25,4,XX:YY::
PRINTwhite$
1120 VDU18,0,3,25,4,XX:YY:
:PRINTvel$
1130 ENDPROC
1140 DEFPROCto:VDU18,0,0,2
5,4,575:944:PRINT"to":VDU2
5,4,32(20-LEN to$):894:PR
INT to$
1150 ENDPROC
1160 DEFPROCfrom
1170 VDU18,0,0,25,4,511:42
4:PRINT"From":VDU25,4,32(1
20-LEN from$):376:PRINT fr
om$
1180 ENDPROC
1190 DEFPROCchc
1200 AX=22:BY=26
1210 FOR JX=1 TO 2
1220 xX=0:yX=0:cX=7
1230 FOR IX=1 TO 2
1240 VDU18,0,cX:25,4,372-x
X:544+yX:237:25,4,800-xX:59
2+yX:237:
1250 FOR YX=AX TO BX
1260 IF JX=1 THEN RX=1 ELS
E RX=3
1270 RESTORE(20*96+(YX+RX-1
6)*10)
1280 REPEAT
1290 READ XX
1300 VDU18,0,cX:25,4,XX*32
-xX:YX:32+yX:237
1310 UNTIL XX=-1
1320 NEXT
1330 xZ=8:yZ=8:cZ=1
1340 NEXT
1350 AX=15:BY=19
1360 NEXT
1370 ENDPROC

```


Christmas Card listing

From Page 41

```

1300 DEFPROCbell(E,F)
1390 VDU10,0,1;25,4,E;F;P
RINTbellone$
1400 VDU10,0,3;25,4,E;F;P
RINTbelltwo$
1410 ENDPROC
1420 DEFPROCbells(E,F)
1430 F=1023;FOR E=2 TO 16
STEP 2
1440 PROCbell(E*64,F);NEXT
1450 E=0;FOR VZ=1 TO 2
1460 FOR F=5.5 TO 13.5 STEP
P2:PROCbell(E,F*32);NEXT
1470 FOR F=22 TO 28 STEP2:
PROCbell(E,F*32);NEXT
1480 E=1151;NEXT
1490 ENDPROC
1500 DEFPROCcorners:GCOL0,
0
1510 RESTORE2210;FOR NZ=1
TO 4:READX1,X2:VDU25,4,X1;
X2;25,0,120;0;25,0,120;-1
0;25,0,120;0;
1520 NEXT
1530 ENDPROC
1540 DEFPROCcirc(X,Y,X1,X2)
1550 VDU25,4,X1;X2;Y;
1560 FOR theta=0 TO 360 STEP
30
1570 X=X1+X2*COS(RAD(theta))
1580 Y=X1+X2*SIN(RAD(theta))
1590 VDU25,4,X1;Y;25,0,5,X
2;X1;Y;Y;
1600 NEXT
1610 ENDPROC
1620 DEFPROCsm:GCOL0,7;PRO
CCirc(350,80,80);PROCcirc(3
50,200,40);PROCcirc(930,80,
80);PROCcirc(930,200,40)
1630 VDU10,0,0;RESTORE2220
FOR JX=1 TO 10:IF JX%8 VDU
10,0,1
1640 READ X1:READY1:VDU25,
4,X1;Y1;236;1;NEXT:VDU10,0,0
:PLOT69,325,210:PLOT69,375,
210:PLOT69,905,210:PLOT69,9
55,210
1650 VDU25,4,322;198;247;2
5,4,904;198;247;
1660 VDU10,0,0;25,4,323;26
0;248;25,4,900;260;248;
1670 ENDPROC
1680 DEFPROCstoredata
1690 RESTORE 2250
1700 %70=244;FOR IZ=244 T

```



```

0 1 STEP-1:READ JX:IX%400=
JX;NEXT
1710 ENDPROC
1720 DEF PROCAssemble
1730 pointer=0;sound=0;71
:;sound=1;sound=2;-15;oswor
d=0;FF1;osbyte=0;FF4
1740 %220=0;0;76221=0;09
1750 FOR pass=0 TO 2 STEP
2
1760 P1=0;00
1770 C OPT pass
1780 PHP:PHA
1790 TXA:PHA
1800 TYA:PHA
1810 LDA #0
1820 LDY #0
1830 LDY #FF
1840 JSR osbyte
1850 CPX #0
1860 BMI end
1870 LDY pointer
1880 LDA #00,Y
1890 STA sound+4
1900 DEY
1910 LDA #00,Y
1920 STA sound+6
1930 LDA #0
1940 LDY #sound MOD256
1950 LDY #sound DIV256
1960 JSR osword

```

```

1970 DEC pointer
1980 DEC pointer
1990 BNE end
2000 LDA #244:STA pointer
2010 end
2020 PLA:TAY
2030 PLA:TAY
2040 PLA:PLP
2050 RTS
2060 J
2070 NEXT
2080 #FX14,4
2090 ENDPROC
2100 DATA 2,3,4,6,8,10,12,
14,16,17,18,21,24,26,28,30,
32,33,34,37,-1
2110 DATA 2,3,4,6,8,10,12,
14,16,17,18,21,24,26,28,30,
32,33,34,37,-1
2120 DATA 2,6,8,10,12,14,1
8,21,24,26,28,30,34,-1
2130 DATA 2,6,7,8,10,11,14
,16,17,18,21,24,26,28,29,30
,32,33,34,37,-1
2140 DATA 2,6,8,10,12,14,1
6,21,24,26,28,30,32,37,-1
2150 DATA 2,3,4,6,8,10,11,
12,14,16,17,18,20,21,22,24,
26,28,29,30,32,33,34,37,-1
2160 DATA 10,12,14,16,18,2
2,27,-1

```

```

2170 DATA 10,12,14,16,18,2
2,27,-1
2180 DATA 10,11,12,14,15,1
6,18,19,20,22,23,24,26,27,2
8,-1
2190 DATA 10,12,14,16,18,2
0,22,24,26,28,-1
2200 DATA 10,12,14,15,16,1
8,19,20,22,23,24,26,28,-1
2210 DATA 0,1023,1151,1023
,0,103,1151,103
2220 DATA 300,40,300,70,30
0,100,300,130
2230 DATA 800,40,800,70,80
0,100,800,130
2240 DATA 300,205,800,205
2250 DATA 80,15,88,5,80,
10,68,30,80,15,88,5,80,
10,68,30,100,30,96,30,1
00,30,80,30,88,30,100,15
,96,5,80,10,80,15,88,5,
80,10,68,30
2260 DATA 96,18,88,9,80,
18,68,9,76,9,80,9,76,9,
68,27,96,18,88,9,80,18,
68,9,76,9,88,9,76,9,68
,27,80,18,0,80,9,88,1
8,0,0,88,9,96,18,0,0,9
6,9,100,9,100,9,96,9,88
,9,96,9,88,9,80,18,76,9
,68,40
2270 DATA 96,5,0,0,96,5,
0,0,96,10,0,0,96,5,0,0
,96,5,0,0,96,10,0,0,96
,5,100,5,80,7,88,3,96,2
0,100,5,0,0,100,5,0,0,
100,7,0,0,100,5,96,5,0,
0,96,5,0,0,96,3,0,0,96
,3,100,5,0,0,100,5,100,
5,88,5,80,40
2280 DATA 52,10,72,10,0,
0,72,10,80,5,88,5,72,10
,0,0,72,10,88,5,92,5,1
00,10,0,0,100,10,100,10,
92,20,80,5,88,5,92,10,
0,0,92,10,100,10,80,10,
0,0,80,10,72,5,88,5,80,
10,68,10,68,10,72,40
2290 MODE6
2300 REPORT:PRINT* at line
*:EOL

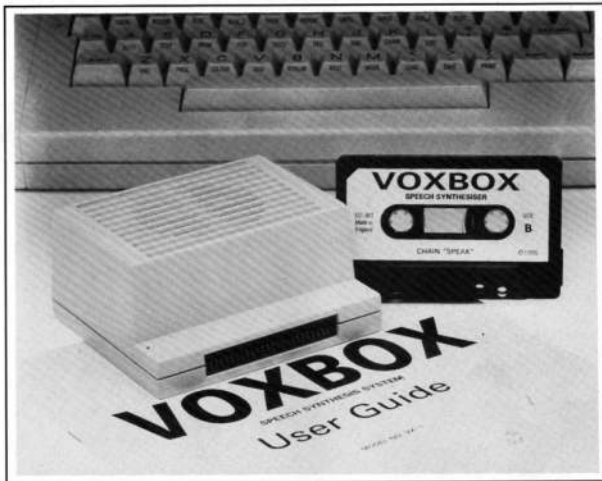
```

This listing is included in this month's cassette tape offer. See order form on Page 61.

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THIS month sees the second of our adventure top tens. As you can see, *Wheel of Fortune* still retains the number one spot, a result that I completely agree with as in my opinion it is the best adventure available for the Electron.

Classic Adventure, *Sphinx Adventure* and *Twin Kingdom Valley* are still doing well, though the other three Epic games have slipped quite a lot.

Pettigrews Diary has made a welcome appearance, as have *Philosophers Quest* and *Eye of Zoltan*.

Potter Programs have two games in at equal tenth and their other adventure, *Super-spy Flint*, was actually the next highest marked.

Surprisingly (to me), two adventures that I have not yet seen, *Galadriel in Distress* and *Strange Odessey*, are in there too.

Keep your marks coming in for the next Top 10 in a few months time.

I've bowed to the vast weight of correspondence asking me to do a Sphinx special. Next time I shall be telling you what does what and to who!

Incidentally, I still haven't managed to get all the way through it without that blasted dwarf getting me. Does anyone please know a way of saving a game?

M. Carter has asked me to mention that he has written in as his friend doesn't believe him and Suzanne has asked me to say hello to Sam P. and Sam W. Hello! And that's the last time I'll do that.

Sacha El-Mokaden (hope I got that right Sacha), has written in with a few questions. As far as I know, Acornsoft don't have any new adventures scheduled for release.

I don't know if the *Fourth Protocol* is to be released for the Electron - though I hope it will be - and Level 9 have no plans to convert their adventures.

David Johnson, Richard, Ian, Andrew and Lee among others have been asking over the last few months how to put

in the fuel capsule in *Stranded*.

I must confess that I have been telling them to insert the capsule but I have had a reply telling me I was wrong!

I have had another look at it and the solution is to drop the capsule and then pull the lever.

P.G. Peters has followed some earlier advice of mine and shot the robot, but hasn't realised that the recoil has thrown him towards the ship and that he can now go into the airlock and use that lockpick.

Peter Laughton and Steven Bloud have some questions about *Sadim Castle*. How do you get the wheelbarrow through the undergrowth, how do you get the knife and where do you dig with the pickaxe?

Ken Edgar can't get through the jammed heavy metal door at the end of the underground tunnel. Can anyone help with any of these problems?

Iain McLean has sent in some useful tips for *Countdown to Doom* and has also asked for some help.

- Does the three metre cube have anything to do with the small island?
- What is the purpose of the black hole?
- Can the magnetic generator be switched on and can

Adventure Top Ten

- | | | |
|----|--|-------------------------|
| 1 | Wheel of Fortune | Epic Software |
| 2 | Philosophers Quest | Acornsoft |
| 3 | Classic Adventure | Melbourne House |
| 4 | Eye of Zoltan | Softek |
| 5 | Sphinx Adventure | Acornsoft |
| 6 | Strange Odessey | Adventure International |
| 7 | Twin Kingdom Valley | Bug-Byte |
| 8 | Pettigrews Diary | Shards Software |
| 9 | Quest for the Holy Grail | Epic Software |
| 10 | Staff of Law/
Galadriel in Distress | Potter Programs |

That Wheel of Fortune is still spinning in the top spot

you enter the surface sewer after going south from the ruined city?

I haven't done so well here myself, so any help will be much appreciated.

Darren Woodward would like to know how to get the pageage off of *Cleopatra's Needle*. So would I. I would also like to know what a pageage is!

Andi Sinnott has asked for help with *The Count* but has not given me any idea what the problem is. Please write back Andi and tell me where you are stuck.

Kristina Hook Totton has asked some interesting questions about *Twin Kingdom Valley*.

You can end the game by entering QUIT but once you have done this you can only load in a saved game or restart by loading in the game from scratch.

To save a position on tape you enter in *SAVE and to reload a saved position you type *LOAD. The program does the rest.

Some versions of the game don't seem to accept these commands, in which case I'm afraid you can't save your position.

The reason you keep getting the message "locked" is

because you are trying to cheat.

Without getting too technical, the easiest way to explain it is to say that the program has been saved in such a way that it cannot now be LOADED or *LOADed in. It can only be CHAINED or *RUN.

Stuart Moore is having trouble with *Galadriel in Distress*. Can anyone tell him how to read the runes on the signs and open the chest in the fire goblins' room?

H. Reynolds can't talk to the ghosts, find the gun or burn the sagebrush charcoal in Ghost Town. Isn't charcoal the result of burning something? Anyway, can anyone help him?

Finally, before moving on to problems I can solve, thanks to Simon O'Callaghan I can reveal how to get the keys in *Greedy Dwarf*.

Light the torch one move north of the rats and throw it south. Easy when you know how.

Hints Department

Richard Hayward and Peter Laughton are both having problems getting into the caves in *Adventure*. Richard says he has tried OPEN

SESAME and it doesn't work. It does you know! And that should also answer Peter's question.

Colin Mayner wants some answers to his problems in **Eye of Zoltan**. SAY the PASSword to get into the castle.

Don't bother with the tiger yet, you need to get something from the castle to protect you.

That maze does contain something you want, but doesn't lead anywhere.

Scott, Tim, Celici and Craig have asked for help with **Castle Quest**.

The witch doesn't like water but since she is very agile I suggest you find an enclosed space and throw the bucket at her.

You can go two ways to the witch. One way you have already seen all the screens you are going to see, which assumes you have got past the troll.

The other way assumes you have got past the spider, but to see anything further you will have to go back and get past that troll!

A lot of the screens you think you can see are just window dressing.

Matthew Bowen and Andrew Davies have two questions about **Twin Kingdom Valley**—how to get the jug of gold and how to kill the dragon?

Try filling the jug and use a staff.

M. Ryan has written in to ask whether there is anything in the maze in **Classic Adventure**. Yes and no.

There are two mazes, one contains the vending machine and need not be entered, while the other contains some treasure.

Nicholas Ryba has got the chain in **Classic** but doesn't know what to do next. Take the bear back the way you came.

Carl Barlow—thanks for the tips on **Strange Odyssey** by the way—wants to know how to open the keybox in the **Stolen Lamp**.

Use the grenade to open the box, but do it in such a way as to kill two birds with one stone.

Jason Drew wants to know how to kill the guard and the vizier. Think of the guard as a

bird. You can't kill the vizier.

Andrew Clark and Amanda Kemp want to know how to get across the glacier in **Sphinx Adventure**. As long as you have got the ring you can use the wand.

Andi Sinnott, Jonathan Lee, Andrew A. S. Kelly, Nicholas Ryba and Jamie Rees are also having problems with **Sphinx**. Try magic in the spell chamber, though rubbing the ring should be left till last.

The bear will follow you and chase off the orc. Use the cheese past the goblins to catch the mouse—you should feed it.

The mouse is in the dungeons of the vampire's castle. Use your bare hands to kill the dragon.

The only thing you can't do with the bear following you is cross a certain bridge.

Diaxos will help you get back anything the troll takes, even though he keeps it safe

bone.

Chris, James Quinn and H. Reynolds also have some problems with this adventure. Wave something to get down the cliff. I think the burnt scroll is a red herring.

I don't think you can get back through the gate. Drop a sausage and map carefully to get back out of the maze. Kill the spider with the sword.

Yes, there is something north of the cave of echoes—use the amulet to find out what is there.

Simon O'Callaghan and Iain McLean want some help with **Countdown to Doom**. The spacesuit is UP and NORTH of the landing area and if you save that blob from falling into the swamp you be rewarded with a trip back in time.

Christian Howells and Eric Clarke are stuck in **Wheel of Fortune**. Tell the former about the bull and he will go off to get it. Shoot the

and feed the oyster.

Peter Laughton and Ken Edgar would like some help with **Sadim Castle**. Use the stake to raise the portcullis. Give the wheelbarrow to the gardener after killing the cheetah with the knife.

Jason McCauley is well and truly stuck in **Gisbournes Castle**. The flint is used to fire the cannon. The dynamite is a red herring.

You need the rope and the key to get into the dungeons. Kill Gisbourne and get a key off of him to get into the chapel. Oil the rusty lock to get through.

Geoff Lumley has written in with a lot of questions about **The Count**. I haven't received a review copy of this yet but his letter raised such a lot of questions that I went out and bought it.

His first question concerns the capital As that keep cropping up in the text. These are not clues but mistakes!

He goes on to ask if **ADEWNTURE** and **TAKE INORY** mean anything. No, they are also spelling mistakes.

The program also responds with a **YOU CAN'T DO THAT YET** when you try to fly. Ignore this, you can't fly.

The dedication to Alvin Files and using a mixture of upper and lower case in the opening description are also not clues of any kind.

You don't need to get into the coffin until you are ready to finish the game. The **CENTURY OF DUST** is a clue to the fact that the room isn't used and therefore a safe place to leave things.

The vents are red herrings. Yes, you can get back into the bedroom from the ledge if you use the right command.

The first night you will get bitten, but the bottle of blood will help on the second night.

The crowd are hostile because you haven't killed Dracula.

Last, but not least, Christopher Morgan can't get the coin in **Mystery Fun House**. A sticky problem this!

Chew the gum, stick it on the branch and then you can get the coin from the grating, but make sure that you keep the gum for later.

I'll leave that for you to chew over. See you next month.



for you. The Sphinx is in the desert.

To get past the pirate without losing anything you should map out the locations carefully. When you have found the way round him, use it.

Tony Sweetland and Jason Drew have some questions about **The Incredible Hulk**. You can't get in the chief examiner's office without being seen.

To pull the ring in the first room remember what Strange told you. To get the bio gem without the natter egg exploding try eating the egg.

To get past the ants you should make sure that the wax leaves them no offence to enter.

Patrick Moore (any relation?) wants to know how to get past the ferocious dog in **Greedy Dwarf**. Give it a

werewolf with the silver bullet.

Once you have got down the well you should explore everywhere and take everything to the canal bank. Then go into the fly's cave and out into the spider's cave.

You now need to go back up through the trapdoor (hint—it's bolted). I'll leave it to you to find out what objects to take with you and what to leave up by the canal.

Simon O'Callaghan and the King of the Valleys (sic) have asked for help with **Castle Frankenstein**. The hammer is in the castle kitchen—somewhere. The monster will help with the ring near the experiments room.

Pyramid of Doom is also causing problems for H. Reynolds and for C. Sullivan. Leave the purple worm alone, throw the ruby at the statue

Creating a crafty Plus 3 disc menu



LAST time we had a look at the ADFS directories. Now we are going to delve a bit deeper into the topic and develop an intelligent disc menu for Plus 3 owners.

If you remember, there can be several directories on a disc. To create a new directory you use *CDIR. The currently selected directory is called the CSD.

A directory consists of five contiguous sectors on the disc and is 1280 bytes long.

There's enough room for 47 entries and each entry is 26

bytes long. This is a total of 1222 bytes.

The rest of the space is taken up with its name, title, parent and sequence number.

The sequence number is the number after the name when you *CAT the disc. This is incremented every time you save a file.

Whenever a file is saved, its name, length, load and execution address is placed in the CSD.

It would be very useful if we had access to the directory information. We would then

know all there is to know about every file saved.

It's easier than you think to access the CSD. Just place a disc in the drive and type:

#MOUNT

This loads the root directory \$ into memory. If the \$ directory contains another called Games, then typing:

#DIR Games

will load the directory Games into memory. The CSD is the directory currently in memory, loaded to &1200 and running

up to &16FF.

The first byte is the sequence number, followed by HUGO. It was Hugo Tyson that wrote the ADFS, so naturally he put his name in.

These four bytes are followed by the directory entries

Name and access	10 bytes
Load address	4 bytes
Execution address	4 bytes
Length	4 bytes
Start sector on disc	3 bytes
Sequence number	1 byte

Table 1: A directory entry

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We wanted to tell you that **ADDCOMM** is...

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We thought you should know that **ADDCOMM** is...

"Highly recommended for graphics programming", but "Using the BBC Micro" said that in their No. 1 issue.

We could have informed you that the...

"ADDCOMM chip vastly increases the power of the Micro from the programmers' point of view", but "Education Equipment" (Oct. '84) found out first.

We could sum up by simply announcing...

"ADDCOMM is brilliant".

but, guess what, "Electron User" (June '85) got in before us!

So, that just leaves us with the boring bits of what it costs:

£28.00 including VAT and Post.

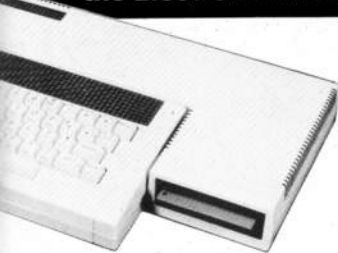
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If you only want to read about **ADDCOMM**, send us a stamp for the sixteen page brochure which also contains recent reviews.

ADDCOMM is suitable for the ELECTRON with ROM Box, also the BBC 'B' 0.5, 1.20 and the BBC 'B'.

the Electron's disc filing systems



starting at & 1205, each 26 bytes long. A zero byte follows the last entry.

Table 1 shows how the 26 bytes are used. Enter Program 1, place a disc in the drive and type *MOUNT. When it is run the directory entries for all the files in the S directory will be listed as in Table 1.

As you can see from the listing, some fiddling is necessary to print out the name. Bit 7 of the first four characters contain the access flags, so the byte is ANDed with &7F to remove this.

If bit 7 of the fourth character is set, for example, then the entry is a directory. This is useful as we'll see later. The other flags aren't important at the moment.

The name can be up to 10 characters long. If it is less than 10 it ends with a carriage return.

Now that we know all about the files in the CSD we can create an intelligent disc menu

```
10REM PROGRAM 1
20a=&1205
30REPEAT
40PRINT
50i=0
60char=a%7 AND &7F
70IF char%31 AND char%12
7 VDU char
80i=i+1:IF (a%7 AND &7F)
(>)13 AND i%10 GOTO 60
90IF a%31%127 PRINT "...D
irectory" ELSE PRINT
100PRINT "Loads to &:"a%1
10 AND &FFFF
110PRINT "Execs at &:"a%1
14 AND &FFFF
120PRINT "File is &:"a%18
AND &FFFF;" bytes long"
130a=a+26
140UNTIL ?a=0
```

Program 1

program. By intelligent, I mean that it will examine the disc when it is run and create a menu using the information in the CSD.

This means that it will run on any disc and in any directory.

Program 11 is the listing for the Plus 3 Disc Menu. All the information is in RAM as we've seen, so it's simply a matter of extracting the data we require.

PROCcatalogue looks up the names and prints them in a list on a Mode 1 screen.

If the entry is a directory, found by looking at bit 7 of the fourth letter, then the name is printed in yellow. All other files are in red.

A pointer is placed by the first item. Cursor up and down moves it up and down the list and Return is used to select an item.

If the item selected is a directory then it is made the CSD and a new menu is printed.

Escape is used to move back to the previous directory. This simply executes *BACK. The directory is obtained from &16CC and the title from &16D9.

When an item which isn't a directory is selected, its load and execution addresses are looked up. If the execution address is &8023 it must be Basic, so the file is CHAINED.

An execution address of &FFFF or -1 means it should be EXECed. All other files are machine code, which you have the option of *LOADing or *RUNning.

● That's all for this month. Next time we'll see how to transfer your unprotected software to disc and set up a BOOOT file to run your disc menu automatically.

This will be useful for owners of Cumana disc drives as well, so don't miss it.

```
10REM Plus 3 Disc Menu
20REM By R.A.Waddilove
30REM (c) Electron User
40MODE 1:VDIR
50VDU 23,1,0,0,0,0,0,0:FX4
1
60ON ERROR IF ERR<>17 RE
PORT:PRINT "at line "ERR:10
SCLI"FX4":END ELSE CLS:*BAC
K
70REPEAT
80PROCcatalogue
90PROCoption
100UNTIL chosen
110MODE 6:PRINT
120IF (address%14 AND &FF
FF)=&8023 THEN OSCLI "KEYB
NEW:MCCHAIN ***+file+***"
:GOTO 190
130IF address%14=-1 THEN
OSCLI "KEYB NEW:MCEXEC "+fi
le+***"IN":GOTO 190
140PRINT "(1) *LOAD ":(fi
le+***"(2) *RUN ":(file+
150REPEAT chosen=GET-48
160UNTIL chosen=1 OR cho
sen=2
170IF chosen=1 THEN OSCLI
"KEYB NEW:MCLOAD "+file+***
"IN"
180IF chosen=2 THEN OSCLI
"KEYB NEW:MCRUN "+file+***
"IN"
190*FX21
200*FX138,0,128
210*FX4
220END
230
240DEF PROCcatalogue
250files=&1205-26
260REPEAT files=files+26
270UNTIL ?files=0
280files=(files-&1205)DIV
26
290COLOUR 3:PRINT "Titl
e:"
300COLOUR 2:PRINT TAB(8,1
)FNname(&16D9,19)TAB(6,3)FN
name(&16CC,10)TAB(29,3)*BA
CK
310COLOUR 129:COLOUR 2:PR
INT TAB(1,31)"Use Cursor ke
ys and Return to select":C
OLOUR 128
320address=&1205:N%1=0
330IF ?address=0 ENDPROC
340IF address%31%127 COLOU
R 2 ELSE COLOUR 1
350PRINT TAB(20*(N%DIV23)
+2,6+N%MOD23)FNname(address
,10)
360address=address+26:N%1=
N%1-(files%23)
370GOTO 330
380
390DEF FNname(A%,length)
400B%:=name%:""
410REPEAT C%:=A%&7X AND &7
F
420IF C%>31 AND C%<127 na
me$=name$+CHR$(C%)
430B%:=B%+1
440UNTIL (A%&7X AND &7F)=
13 OR B%=length
450=nae$
460
470DEF PROCoption
480REPEAT UNTIL files
490N%:=0:COLOUR 3:*FX21
500REPEAT
510PRINT TAB(20*(N%DIV23)
,6+N%MOD23):
520IF files%23 N%:=N%+2*(
INKEY(-58) AND N%>0)-(INKEY
(-42) AND N%<(files%2-2)) EL
SE N%:=N%+(INKEY(-58) AND N%
>0)-(INKEY(-42) AND N%<(file
s-1))
530PRINT " ":(STRING$(10,
CHR$(9)):" ":(TAB(20*(N%DIV23)
,6+N%MOD23))>:(STRING$(10,
CHR$(9)):""
540UNTIL GET=13
550IF files%23 N%:=N%/2
560chosen=N%
570address=(&1205+chosen%
26)
580CLS:file$=FNname(addr
es,10)
590IF address%31%127 THEN
chosen=FALSE:OSCLI "DIR "+f
ile$ ELSE chosen=TRUE
600ENDPROC
```

Program 11

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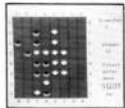
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NOTEST

WHEN my son started to learn to play the recorder, I wondered if there was any way in which he could use our Electron to help him.

At about the same time his music teacher at school asked if I could transform an idea of hers into a computer program for the school's BBC Micros.

I had already written a program to show the fingering on a recorder and how it relates to the musical notes. Notest is the result of combining these ideas.

The program has three distinct phases. The first is

when the graphics characters, title strings and plotting data are initialised and the various options available during the test are selected.

The options are selected from a menu page which can be recalled at any time by pressing Escape.

Firstly, a starting and finishing level of difficulty are selected. The notes which are available at any level of the test are shown.

Other options include whether the sound effects are to be on or off, and whether the program will automatically

go on to the next level of difficulty when a test has been completed successfully.

Also you can choose how many tries you will have to get a test at any level correct before being put out of your misery.

The next phase is the test itself. A treble staff is drawn on the screen and 10 notes, selected from all of those available at the current difficulty, are drawn at random on the staff.

All the notes available are shown by name above the staff and the program will only accept one of these as an answer.

You get three attempts to get the name of the note being pointed at correct.

If the answer is right the

note is played, if wrong a rude noise is made and the answer is written under the note. This process is repeated for all the notes.

Finally the program checks if all of the answers are correct and, if so, it moves to the next level – unless it is at the final level, when it prompts for another person to try.

If the test was not correct and the total number of attempts at that level has been exceeded, the program also asks for another user.

If the manual mode has been selected the program will ask if you want to go to the next level.

I know it sounds complicated, but children seem to

The very difficult test.

Choose from the ones below by typing its name followed by RETURN

C C# D D# E F F# G G# A A# B



What note being pointed at ?

VARIABLES

ok	TRUE if test was correct.
tries%	Attempts so far.
atmp%	Maximum number of tries allowed.
auto%	TRUE if level raised automatically.
diff%	Current level.
strd%, find%	Starting and final difficulty.
name\$	User name.
num\$()	Describes n'th test.
key\$	Key press.
diff\$()	Stores available notes for any level.
i%, p%, n%	General counters.
deg\$()	Describes the degree of difficulty.
quest\$()	Stores the questions for any test.
ypos%	Byte array for note position on staff.
ptr%	Offset to byte arrays.
byte%	Byte read from byte array.
crt\$	Characters for a crotchet.
vnt\$()	Characters for any note on the staff.
mnt\$()	Names of notes.
bnt%	Byte array storing type of note to draw.
pnt%	Pointer to note under test.
blnk\$	Blanks out pointer.
tot%	Score.
lquest%	Note being pointed at.
lgo%	Counts number of tries at any note.
nt%	True if answer is correct.
valid%	True if note is valid for current level.
lans\$, li%, lch\$	Local variables for FNgetnote.

PROCEDURES

instructions	Display instructions and current level of test.
setup	Set up graphics and plotting data. Also the user options are set up here.
getname	Get user's name.
playnote (n%, i%)	Play note number n% for time i%.
stave	Draw a treble staff.
shownote (tnt%, xpos%)	Draw note number tnt% at position along the staff of xpos%.
setquestion	Set up the array quest\$ with a random selection of notes.
answer	Get answers until the test is completed successfully or set number of attempts is exceeded.
FNgetnote	Returns a string describing a valid note.
rasp	Make a rude noise.
score	Assess score and move on to next level if OK.
nextgo	Invite next user to try.

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be able to cope with it very well, and they enjoy using it.

The notes are stored as user defined characters, and plotted on the stave with VDU 5 using positions stored in a byte array called *ypos%* and accessed using byte indirect

tion. This leads both to a faster executing program and more economical use of memory.

The notes can be one of six orientations, depending on whether they are between the lines of the stave, across them, above or below them.

This data is stored in the byte array *bnt%* and accessed

in the same way.

Each note is assigned a number from 1 to 25 and a test is set up by setting the string array *quest\$(10)* to a random selection of notes from the string array *diff%*. The actual string being used is indexed by *diff%*, the level of difficulty.

String arrays are used

because it is easier to use the Basic function INSTR to see if the answer given is a valid one.

One improvement I suggest would be to enable the test to be carried out in a different key signature, but you would have to generate a different version of *bnt%* for each one. Over to you, maestro...

```

10REM Musical notation t
ester
20REM ** NOTESET **
25REM (c) Electron User
30REM MIKE PLUMMER
40BERROR GOTO 170
50*FX225
60*FX4.1
70MODE4:VDU 23.1.0.0:0:0
:19.0.7:0:19.1.0:0:0:FX11.0
80PROCsetup
90REPEAT
100PROCInstructions
110PROCsetquestion
120PROCanswer
130PROCscore
140UNTIL FALSE:END
150:
160REM -- Return to menu
when ESC --
170 IF ERR=17 THEN VDU 4,
24.0:0:127:1023:RUN ELSE
MODE6:REPORT:PRINT * at line
*:ERL:END
180:
190REM -- Print instructi
on menu --
200DEF PROCInstructions
210IF NOT ok tries=tries
+1 ELSE IF auto% diff%dif
f%:tries=1
220IF diff%find% OR tri
e%:atop% PROCnote:REPEAT
UNTIL GET%="":PROCnote:
230CLS:PRINT "TAB(3)"Mus
ical note test by M.J.Plum
mer"TAB(3)
240PRINT"TAB(5)"Hello. "
name%:"TAB(5)"This is v
our "num(tries%)" trv at
the"TAB(5):deof(diff%):"
test."
250PRINT"TAB(5)"The comp
uter will ask you to tell"
TAB(5)"what each of ten not
es are and"TAB(5)"you will
have 3 tries at each note.
"
260PRINT"TAB(5)"You have
":atop%-tries%+1:IF atop%
-tries%+1=1 PRINT "oo:ELS
E PRINT " goe":
270PRINT" left to get a t
est"TAB(5)"at this level r
ight":IF strd%find% PRINT
" and if you do"TAB(5)"the
next one will be more"TAB
(5)"difficult." ELSE PRINT
"
280PRINT"TAB(5)"If you c
annot get it right in "ata
p%TAB(5)"the computer will
show you the"TAB(5)"answe
rs and someone else can"TA
B(5)"have a go."
290 PRINT TAB(10.30)CHR#7
+Press SPACE to start:REP
EAT *FX21.0
300UNTIL GET%=" "
310ENDPROC
320:
330REM -- Define characte
rs and tune --
340DEF PROCSetup
350CLS:PRINT "TAB(3)"Mus
ical note test by M.J.Plum
mer"TAB(3)
360PRINT " (1) G,A,B"
" (2) D,E,G,A,B" (3) D,
E,G,A,B,C above middle,B"
370PRINT " (4) Scale of C
major & B" (5) Scale of C
major & D,E,F,G" (6)
Two octaves from middle C (
incl B)"
380REPEAT:FX21.0
390PRINT TAB(1.6)"Select
starting difficulty :- "
CHR#8:strd%=GET-48:UNTIL s
trd%0 AND strd%7:PRINT TA
B(1.6) Starting difficu
lty is "strd%:" +CHR
#7
400REPEAT:FX21.0
410IF strd%6 PRINT TAB(1
.20)"Select final difficult
y ("strd%:-6) :- " +CHR
#8:find%=GET-48:UNTIL find
%strd% AND find%7 ELSE f
ind%=6
420PRINT TAB(1.20) Fi
nal difficulty is "find%:"
"
430VDU7:FX210.0
440REPEAT:PRINT TAB(1.22)
"Do you want sound effects
(Y/N) ?":key%=CHR$(GET AND
15%):UNTIL INSTR("YN",key%
)=1:PRINT TAB(1.22) " Sound
effects are "":IF key%="Y"
PRINT "ON " ELSE
PRINT "OFF "
450VDU7:IF key%="N" THEN
*FX210.1
460diff%=strd%-1:tries%+1
470REPEAT:PRINT TAB(1.24)
"How many tries at problem
(1-9) ?":atop%=GET-48:UNTIL
atop%0 AND atop%10:VDU7:
PRINT TAB(1.24) " Number
of tries "atop%:"
" +CHR#7
480REPEAT:PRINT TAB(1.26)
"Automatic move to next lev
el (Y/N) ?":key%=CHR$(GET
AND 15%):UNTIL INSTR("YN",k
ey%):IF key%="Y" auto%=TRUE
ELSE auto%=FALSE
490ok=istrd%find%:IF ok
auto%=FALSE:GOTO 520
500PRINT TAB(1.26) "
":IF auto% PRINT "Automatic"
: ELSE PRINT "Manual":
510PRINT " Level change
" +CHR#7
520PRINT TAB(5.20)"Press
ESCAPE to reset these"
530PRINT TAB(5.30)"Press
SPACE to start the test"+CH
R#7:REPEAT:FX21.0
540UNTIL GET%=" "
550IF NOT auto% diff%dif
f%+1
560DIM diff%(6)
570diff%(1)=CHR#8+CHR#10+
CHR#12
580diff%(2)=diff%(1)+CHR#
3+CHR#5
590diff%(3)=diff%(2)+CHR#
13+CHR#15
600diff%(4)=diff%(3)+CHR#
1+CHR#6
610diff%(5)=diff%(4)+CHR#
17+CHR#18+CHR#20
620diff%(6)=":FOR i%=1TO
25:diff%(6)+diff%(6)+CHR#i%
:NEXT
630DIM deof(6),quest$(10)
640deof(1)="very easy"
650deof(2)="easy"
660deof(3)="slightly diff
icult"
670deof(4)="fairly diffic
ult"
680deof(5)="difficult"
690deof(6)="very difficul
t"
700DIM num(9)
710RESTORE 720:FOR i%=1 T
O 9:READ num(i%):NEXT
720DATA first,second,thir
d,fourth,fifth,sixth,sevent
h,eighth,ninth
730VDU23.234.52.76.132.13
2.132.68.56.0
740VDU23.235.52.124.252.2
52.252.124.56.0
750VDU23.236.4.4.4.4.4.4.
4.4
760VDU23.239.0.0.0.255.0.
0.0.0
770VDU23.240.255.255.255.
255.255.255.255.255
780DIM vpos% 26ptr%1:PE
STORE 800:Vpos%=0
790REPEAT READbyte%:vpos%
70ptr%byte%:ptr%+1:UNTIL
ptr%26
800DATA0.0.15.15.30.45.45
.60.50.75.75.90.105.105.120
.120.135.150.150.165.165.18
0.180.195.210
810crt%=CHR#236+CHR#10+CH
R#8+CHR#235
820DIM vntf(6):vntf(0)=""
830vntf(1)=crt%+CHR#8+CHR
#239
840vntf(2)=vntf(1)+CHR#8+
CHR#8+"0"

```

Notest listing

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```

850vnt$(3)=crt$
860vnt$(4)=crt$+CHR$(CHR
$8+)*"
870vnt$(5)=crt$+CHR$(8)*"
880vnt$(6)=vnt$(1)+CHR$(10
+CHR$(8)+)*"
890DIM rnt$(25):DIM bnt$
26:RESTORE 910
900ptrX=1:bntX=0:rnt$(0)
="None":REPEAT:READbyteX:bnt
X?ptrX=byteX:READrnt$(ptrX
):ptrX=ptrX+1:UNTILptrX=26
910DATA 1,C,2,C,3,D,4,D,
3,E,3,F,4,F,3,G,4,G,3,A,
4,A,3,B,3,C,4,C,3,D,4,D,
3,E,3,F,4,F,3,G,4,G,1,A,2
,A,5,B,6,C
920PROCgetname
930ptrX="":CHR$(8)+)*"CH
R$(10)+CHR$(8)+)*"
940b1nk$=CHR$(240)+CHR$(10+C
HR$(8)+CHR$(240
950ENDPROC
960:
970REM -- Get the users n
ame --
980DEF PROCgetname
990CLS:PRINT TAB(1,10):I
NPUT "What is your name ? " n
ame$:CLS
1000ok=TRUE
1010ENDPROC
1020:
1030REM -- Play note nX fo
r time tX --
1040DEF PROCplaynote(nX,tX
)
1050SOUND $11,0,0,1:IF nX=
0 ENDPROC
1060SOUND 1,-15,nX+52,tX
1070ENDPROC
1080:
1090REM -- Draw treble sta
ve --
1100DEF PROCstave
1110VDU24,0;200;1279;570::
CLG:MOVE,300
1120PLOT1,1279,0:PLOT0,0,3
0:PLOT1,-1279,0:PLOT0,0,30:P
LOT1,1279,0:PLOT0,0,30:PLOT
1,-1279,0:PLOT0,0,30:PLOT1
,-1279,0
1130PLOT0,-1240,-150:PLOT1
,-20,0:PLOT1,0,225:PLOT1,20,
-35:PLOT1,-70,-120:PLOT1,65
,-40:PLOT1,20,10:PLOT1,-30,
20

```

```

1140ENDPROC
1150:
1160REM -- Show a note on
stave --
1170DEF PROCshownote(tntX,
xposX)
1180VDU5:MOVEExposX,(vposX?
tntX)+315
1190PRINTvnt$(bntX?tntX)::
VDU4
1200ENDPROC
1210:
1220REM -- Set the questio
ns --
1230DEF PROCsetquestion
1240quest$(0)=MID$(diff$(d
iffX),1)AND(LEN(diff$(diffX)
)),1)
1250FORiX=1 TO 10
1260REPEAT
1270quest$(iX)=MID$(diff$(d
iffX),1)AND(LEN(diff$(diffX)
)),1)
1280UNTIL quest$(iX)<>ques
t$(iX-1)
1290NEXT
1300ok=TRUE
1310ENDPROC
1320:
1330REM -- Get answer unti
l right or numbers of tries
exceeded --
1340DEF PROCanswer:totX=0
1350CLS:PROCstave
1360FOR iX=1 TO 10
1370PROCshownote(ASC(quest
$(iX)),iX+100+155)
1380NEXT
1390PRINT "The "ideq$(dif
fX):" test." "STRING$(40,"")
):
1400PRINT "Choose from the
ones below by typing"
" its name followed by RETU
RN"
1410iX=1:FOR iX=1 TO LEN(d
iff$(diffX))
1420questX=ASC(MID$(diff$(
diffX),iX,1))
1430IF (diffX)>2 AND diffX<
6 AND iquestX(15) OR ((diff
X)<3 OR diffX=6) AND iquestX
(13) PRINT TAB(iX*3,13):rnt
$(iquestX)=iX+1
1440NEXT
1450VDU24,0;0;1279;1023:
1460FOR iX=1 TO 10:ntX=FALSE
1470iquestX=ASC(quest$(iX)
):VDU5:IF iX>1 MOVE (iX-1)*

```

```

100+155,200:PRINT blnk$
1480MOVE iX+100+155,200:PR
INT ptrX:VDU4
1490goZ=1:REPEAT:validX=F
ALSE:REPEAT ans$=F:qnetnote
1500FOR jX=1 TO LEN(diff$(
diffX)):IF ans$=rnt$(ASC(MI
D$(diff$(diffX),jX,1)) val
idX=TRUE
1510NEXT:UNTIL validX
1520IF ans$=rnt$(iquestX)
THEN PROCplaynote(iquestX,2
0):ntX=TRUE ELSE PROCcrasp
1530goZ=goZ+1:UNTIL ntX
OR iX=4
1540IF NOT ntX ok=FALSE EL
SE totX=totX+1
1550VDU5:MOVE iX+100+155,2
00:PRINT rnt$(iquestX):VDU4
1560NEXT
1570ENDPROC
1580:
1590REM -- Get a string de
scribing a note from keyboa
rd --
1600DEF FNetnote
1610LOCAL lans$,liZ:REPEAT
1620PRINT TAB(0,30):STRING
$(39,"")CHR$(13:
1630INPUT "What note bein
g pointed at ? " lans$
1640IF LEN(lans$)=0 THEN U
NTIL FALSE
1650lch$=CHR$(0):liZ=1:REPE
A
1660lch$=MID$(lans$,liZ,1)
1670If lch$="a" AND lch$<="
z" lans$=LEFT$(lans$,liZ-1
)+CHR$(ASC(lch$)+45)+M
ID$(lans$,liZ+1)
1680If lch$=" " lans$=LEFT$(
lans$,liZ-1)+MID$(lans$,li
Z+1,1) ELSE liZ=liZ+1
1690UNTIL lch$=""
1700IF LEN(lans$)>2 UNTIL F
ALSE
1710lch$=LEFT$(lans$,1):IF
lch$<"a" OR lch$>"z" UNTIL
FALSE
1720IF LEN(lans$)=2 IF MID
$(lans$,2,1)<"0" UNTIL FAL
SE
1730UNTIL TRUE
1740=lans$
1750:
1760REM -- Rude noise --
1770DEF PROCcrasp
1780FOR px=4 TO 7:SOUND 0
,-15,px,1:NEXT

```

```

1790ENDPROC
1800:
1810REM -- Print score --
1820DEF PROCscore
1830goZ=INKEY(200)
1840CLS
1850PRINT TAB(2,2):"Well,
"names$,""TAB(2)"you have
scored "totX:" out of 10
in the "TAB(2):deg$(diffX)
:" test."
1860IF ok PRINT TAB(2)"MEL
L DONE!! " :IF diffX=findX
GOTO 1920
1870IF ok AND strdX(findX)
PRINT "Now you can try a mor
e""TAB(2)"difficult test."
1880IF ok AND NOT autoZ PR
INT "TAB(2)"Do you want to
(Y/N) ?":REPEAT keys$=CHR$(G
ET AND $F):UNTIL INSTR("YN
",keys$):IF keys$="Y" diffX=d
iffX+triesX=1
1890IF totX>7 AND totX<10
PRINT " Good, just try a l
ittle harder."
1900IF totX<0 AND totX>4 P
RINT " Not bad, you got at
least half the"" test rig
ht."
1910IF totX<6 PRINT " I t
hink you got to a little be
tter."
1920PRINT TAB(5,30)"Press
SPACE to go on"
1930REPEAT UNTIL GET=32
1940ENDPROC
1950:
1960REM -- Get next pupil
--
1970DEF PROCnextqo
1980triesX=1
1990CLS:PRINT "TAB(2)"Tha
t is the end of your turn."
"TAB(2)names$,""TAB(2):
"TAB(2)names$(10,20):IF o
k PRINT "SUCCESSFUL" ELSE P
RINT "FAILED AT LEVEL " :dif
fX
2010PRINT TAB(10,30)"Press
SPACE to go on":REPEAT UN
TIL GET=" "
2020ENDPROC

```

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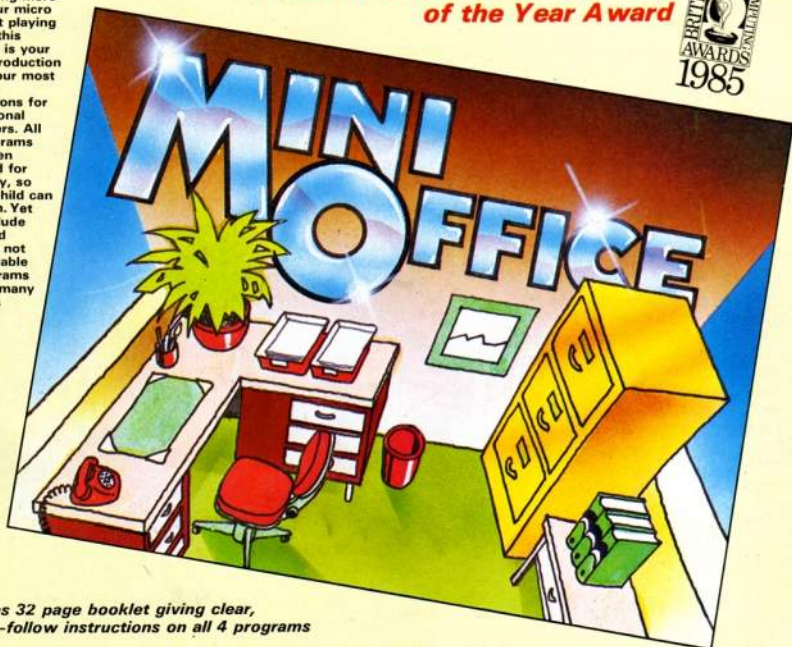
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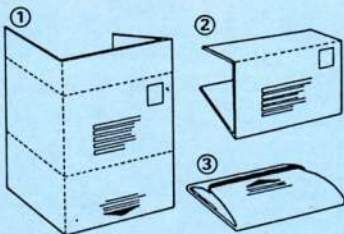
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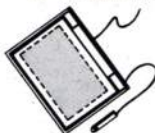
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PROGRAM NOTES

10,20 Give a name to the program and also describe it all too accurately.

30 This initialises the numeric variable *count*, which holds the number of items to be sorted. If you want to change the number of items, all you have to do is to insert them into the data statement of line 190 and alter *count*. The string variable *holding\$* is used later in the program to store a temporary value. It's a scratchpad variable.

40 The DIM sets aside space for a string array *record\$(1)* consisting of *count+1* elements.

50-70 Form a FOR ... NEXT loop which READs in values from line 190 and stores them in the array elements *record\$(1)* to *record\$(10)*.

80-140 Make up the bubble sort which consists of two nested FOR ... NEXT loops. These compare each successive pair of *record\$(i)* and, if the contents of one is larger than the other, swaps them. Eventually, as the comparisons go on, the largest element of the array "bubbles" to the stored in *record\$(10)*. Then the process starts again on the nine remaining unsorted *record\$(i)*.

80,140 Define the outer loop. This has the control variable *span* which ranges from *count-1* to 1, descending in steps of 1. As *span* gets smaller, so the range of the *record\$(i)* that are to be compared, pair by pair, gets smaller.

90 *noswap* is a flag that is initially set to TRUE. The state of the flag is effected by what goes on in the inner loop.

100-120 Make up the inner loop, the one that does the swapping if it becomes necessary. The control variable *comparison* goes from 1 to the current value of *span*.

110 Compares *record\$(comparison)* with the next element *record\$(comparison+1)*. If they are out of order they are swapped, using *holding\$* as a temporary store. If a swap has occurred then *noswap* is made FALSE.

120 By the time the inner loop is completed each pair of elements in the span being considered will have been compared and, if necessary, swapped. The largest element will be in the rightmost position. Try working through the program on paper using *count=4* and trying to sort *d,a,b,c* and you'll see what happens.

130 If the inner loop has compared every element in a particular span and they are all in order *noswap* will still be true. There's no point in further sorting so *span* is set to 1, terminating the outer loop.

140 By the time the outer loop is finished every element in the array will be in its correct position.

150-170 Print out the rearranged array.

190 Holds the items to be sorted.

Notebook

THIS month's notebook program is a bubble sort routine which takes an unordered list and puts them into order. In this case it's a set of letters that want to go into alphabetical order but it could be numbers. Try it and see.

```

10 REM BUBBLE SORT
20 REM SLOW BUT SURE
30 count=10:holding$=""
40 DIM record$(count)
50 FOR loop=1 TO count
60 READ record$(loop)
70 NEXT loop
80 FOR span=count-1 TO 1
STEP -1
90 noswap=TRUE
100 FOR comparison=1 TO
span
110 IF record$(comparison)
>record$(comparison+1) THEN
N holding$=record$(comparison):
record$(comparison)=rec
ord$(comparison+1):record$(
comparison+1)=holding$:nosw
ap=FALSE
120 NEXT comparison
130 IF noswap=TRUE THEN
span=1
140 NEXT span
150 FOR loop=1 TO count
160 PRINT record$(loop):
":
170 NEXT loop
180 PRINT
190 DATA "d,e,i,c,f,h,b,
a,a

```

Initialises
variables
Reads data
into arrays

Flag

Compares adjacent
items and swaps
them if necessary

Ends outer loop if
no swap has occurred
in last inner loop

Prints out
sorted list

Items to
be sorted

Add the following lines and, when you press the space bar, you'll see how the sort progresses:

```

5 span=0
25 MODE 1
33 mark=count
:comparison=0
71 PROCprint
73 wait$=GET$
75 PRINT
115 COLOUR span MOD 2 +1
117 PROCprint
121 wait$=GET$
123 PRINT
141 COLOUR 3
:PROCprint
142 END
143 DEFPROCprint
161 IF loop=mark
AND comparison=span
THEN COLOUR 3:mark=mark-1
185 ENDPROC

```

Trevor Roberts

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Micro Messages

MAY I make a quick rejoinder to your reply to my letter about dirty heads (October Electron User).

I have been using audio tape recorders for many years, from a reel-to-reel Ferrograph to modern Sony cassette type (that should show my age!)

Only once have I had a tape head out of alignment — that was after a recorder had fallen 15ft from the branch of a tree.

Since computer equipment is not usually subjected to such robust treatment, I really cannot believe tape heads frequently cause trouble from this problem.

If a tape head were completely filmed over with dirty grease it would indeed cause problems with all tapes.

However, I find the greater problem arises from small particles which shift around with the passage of the tape causing intermittent faults.

Equally, a long tape not only needs a pretty healthy drive — usually found only on audio cassette units — but can itself become distorted with frequent use.

As a simple analyst I have acquired an undesired reputation as a computer doctor because when I am told "the computer is down", I clean the disc heads and all is well again (saves calling the serviceman out).

Exactly the same applies to cassette heads. — **R.H. Hill, Woodford Green.**

● Tape head alignment is often different on different tape recorders. So, while a tape may load perfectly on the tape recorder it was saved on, it may not load on a totally different one.

Golden outlook

READING through the October issue of your wonderful magazine I couldn't believe my eye's when I saw Beach-Head by US Gold out now for the Electron.

Do you know whether US

Gold are making any other fabulous games for the Electron?

Also in the October Electron User I saw the article on the Voxbox speech synthesiser. Is it worth the money? — **Jonathon Timms, Billingshurst.**

● We'll be reviewing Voxbox as soon as possible, and you'll be able to make your own judgement.

No doubt US Gold will follow up Beach-Head with another superb game as they seem to have the talent for coming up with original and exciting themes.

Trapping the fiend

I'VE just read your review of Alligator's Bumper Bundle in the September Electron User. I've got the cassette and my son and I have had a lot of fun with the games.

About Moll Moll: the fiend, as you call him, is a mechanical robot who can't be killed, he can only be bopped on the head by a skull to push him down one blockspace.

In the early levels you can block his path by strategic placing of skulls.

If you're lucky you can sometimes trap him in the skeleton chamber, after you've got the crystals, by sealing the exit with a skull.

However, since he's somewhat erratic, you can't always plan very well.

It's an interesting game with a fair bit of strategy, lots of luck, and some skill in getting up the difficult entrance to your own side.

My nine-year-old is far better than I am at playing, having reached level 9 and a

score in the 54,000 range! My best is approximately 42,500, level 4. — **Alice Morland, Glasgow.**

● Thanks a lot, Alice. We can't wait to put your tips into action.

Memory routine

WHILE trying to run programs such as Starfigher and Manic Mole I have been having some problems with memory.

Could this be due to the connection to the disc system of my BBC B and if so could you tell me how to overcome this problem? — **Peter Maher, London NW10.**

● Both these programs will run on the BBC Micro. They do need downloading to &E00 though.

Plus 3 owners will experience the same problem. The routine you need was in Micro Messages last August.

Revs for the Electron?

I HAVE just seen the new Acornsoft game, Revs, for the BBC Micro. The inevitable question is, "Will it be available for the Electron in the near future?"

I have always liked racing games but this one seems to stand out from the rest.

The graphics are excellent and from the reviews I have seen it looks another masterpiece from Acornsoft which would be greatly appreciated by Electron owners.

I would also like to know when the Elite replacement will be available as I think some things in the game need

to be polished up a little.

I think I have a problem with Eddie Kidd's Jump Challenge. When the game starts you are on a BMX which has no problems, but once you get on to the motorbike a loud buzz starts, which wasn't there when it was new.

Could you tell me if this is meant to happen or not. — **Martin Egdehl, Hull.**

● Revs is unlikely to be converted for the Electron — we'd love to be proved wrong though.

What's wrong with Elite, it's one of the best games around?

We're not sure what is wrong with your motorbike. It sounds like the exhaust is blowing a bit.

Helping hand

WHEN I first bought my Electron I thought I had made a mistake as there didn't seem to be much software and computer magazines above all, no help.

The I bought Electron User (Acorn User seemed to be all BBC B, no Electron) and what a find! It gives more help, better listings and so on than any other magazine.

In Micro Messages August 1985, David Molyneux's Overdrive routine worked beautifully. I got well over 100,000 (after 100,000 the score resets to 0).

Will Manic Miner ever be made for the Electron? The same goes for Underworld and Sabre Wulf from Ultimate.

I want to know as my friends with Spectrums want to see it on the Electron.

Do you recommend the

From Page 67

Plus 1 Interface or the First Byte Joystick Interface? We can't make up our minds. — Paul and Stephen Moore, Luton.

PS: Also, which is a good, but cheap printer?

● Manic Miner hasn't been converted for the Electron, but there are plenty of similar games. Take a look at Bagger from Alligator.

Both interfaces are good, and both work with some of the games, but neither with them all.

Do you need the printer port and ROM sockets? If you do, then go for the Plus 1. Otherwise there's not much between them.

The only low-cost printers we've used are Brother. The quality is reasonable and they're good value for money.

Problem from space

ALTHOUGH a novice with the Electron, having had mine for just over two months, I must agree with Marilyn Rodger (Micro Messages, September) that there is something wrong with the listing of the game Higher or Lower in the July

WHAT would you like to see in future issues of Electron User?

What tips have you picked up that could help other readers?

Now's here is your opportunity to share your experiences.

Remember that these are the pages that you write yourselves. So

tear yourself away from your Electron keyboard and drop us a line. And please, if you want a reply, enclose an SAE.

The address is:

Micro Messages
Electron User
Europa House
68 Chester Road
Hazel Grove
Stockport SK7 5NY.

issue. I have checked my copy of the game three times and there are no errors, but it stands it will not run in Mode 1.

After listing it and finding it wouldn't work, I thought it must have been an error on my part, but I tried changing to Mode 5 on line 40 after reading Marilyn's letter, and found that the game now runs OK except for the distorted cards.

Surely this points to the original mode being wrong, but how does one now get the cards back to normal?

Before you ask, I don't have a Plus 3 or any other additional hardware attached to my Electron, so why am I running out of memory? — Larry Horsfield, London SE7.

● It sounds as if you've added

a few extra spaces to your listing. (We can assure you ours is accurate.)

The memory is rather tight with this program, so spacing the text out will cause a "No room" error or "Bad mode".

Trouble with the police...

AS a couple of budding stuntmen, my brother and I are keen on Dare Devil Denis (Visions Software).

We would recommend this game to anyone, but we are left wondering if it is possible to get past the policeman and the tree in the third line of board 1 in level F (Ace).

We have never managed it and would like to hear from

anyone who has. — S. Whigham, Prestwick.

● Can anyone help with Dare Devil Denis? We're too cowardly to try it...

Printer program

IN the October issue of Electron User in the Software Surgery section Roland Waddilove reviews the View ROM cartridge from Aconsoft, and states that there is a printer driver program available.

We have been trying for some time to get such a program, and would be very grateful if you can let me know its source.

We have an Olivetti ink jet printer, and would like to know if the above-mentioned program will handle all the excellent capabilities of this printer.

Incidentally, we have a View cartridge for our Electron, and agree with all Roland Waddilove says.

While we also agree with him that the printer program should have been included in the cartridge, we have to make whatever other uses we can of the available data. — Basil Crowhurst, Croydon.

● Aconsoft has produced a View printer driver package for

More educational software

THANK you very much for the list of educational programs in the recent issue of Electron User.

I've sent off for details of many of those listed and now have the problem of deciding what to buy, whereas before I had to buy whatever I could find.

I have, however, in my search for educational programs found several which you have not listed and therefore enclose a list for you so that a possible supplement could be published, as no doubt others will have come across other programs which you did not include in your guide.

I have enjoyed the programs you publish, though my typing needs great

improvement. — Joan Langley, Twickenham.

Collins Software, Collins Educational, Freepost, Glasgow G4 0YX. Tel: 041-772 3200.

Paddington's Shopping Mix Up. Paddington's and the disappearing ink.

Paddington's problem picture. Paddington's early visit.

What's the time? Know your tables. First numbers.

Datalog.

Hill MacGibbon Ltd, St Bartholomew House, 92 Fleet Street, London EC47 1BH. Tel: 01-353 6482.

Pan Course Tutors — Biology, Chemistry, Maths, Physics, Economics, French.

Willow Software, The Willows, Writington Lane, Congressbury, Bristol BS19 5BQ. Tel: 0934 834056.

Early Words. Early Maths.

Highlight Software, 36 Sherbourne Close, Barry, South Glamorgan CF6 5AQ. Tel: 0446 745482.

Reading Pack 1, 2, 3, 4. Bert Boot.

Entertaining English

Ampsoft, 31 Woodbridge Road, Darby Green, Blackwater, Camberley, Surrey. Tel: 0252 876677.

Fun Sums. Sum takeaway.

Adder sums. Sums times.

Sum measure. Measure sum more.

Fun words.

Gemini Marketing Limited, Unit 21, Concorde Road, Dinan Way Trading Estate, Exmouth, Devon EX8 4RS. Tel: 0395 265165.

Alphabet Fun. Edward Bear Tells the Time.

Felicity Farm Girl. Counting Fun.

Pirate Pedro.

Micro-Aid, 25 Fore Street, Praze, Camborne, Cornwall TR14 0JX. Tel: 0209 831274.

Distances. Flags.

Tuxsoft Cooperative Ltd, PO Box 1, Tuxford, Newark, Notts. NG22 0JX.

Pack A — Norman Number Man/What's the Temperature? with the Ghost Game.

Pack B — Number Check/Speed Arithmetic with Number Catch.

Pack C — Tables Tester with Bonus Shoot Out/Tables Square.

The following apparently produce programs for the Electron, though I've not received catalogues yet:

Tutorial Software, Dept. M1E, Wirral L61 1AB.

Chaddington Software, 14 Selkirk Close, Worthing BN13 1PK.

Micro Jan Software, 81 Squirrels Heath Road, Harold Wood, Essex RM3 0LR.

the BBC Micro. As View is virtually identical on both micros it seems likely that that printer drivers work also. Has anyone tried them?

Alive and kicking

I HAVE owned an Electron for about 18 months and have waited patiently for the glut of Electron software.

Sadly it never materialised. Oh sure we have had classics like Elite, Micro Olympics and Cylon Attack, but the Electron has never had a solid support of all types of software.

I have seen the slow increase of software availability for the Electron in the shops, but now, alarmingly, there has been a sudden famine.

It annoys me that the shop which eagerly sold an Electron to me (Granada) haven't the decency to support the machine with software.

It used to, but a few weeks ago I noticed that no new games had appeared on the shelf.

When I asked the assistant why, she told me that because of dwindling interest in games for my machine they would not stock any more software. Other shops are doing the same.

Are all my future purchases going to be by mail order? If so, how long will it be before that oasis dries up?

Anyway less doom and gloom, and a few tips for Elite.

When you have shot an opposing craft, if he has launched an escape capsule pick it up with your fuel scoops and you will have gained one ton of slaves.

Also, has any one else ever found a planet that sells alien funds? I am in Galaxy 7 and have never found a planet which sells these items.

I have presently 253,987.1 cr. and have a combat rating of Deadly.

I have watched Micro Messages grow from one page to several pages. It's my favourite part of the mag, along with Electron News at the front. — A.P. Larsen, Runcorn.

PS: Should Merlin for all his tips for TKV but I am no closer to getting anywhere in it. I cannot get into the cave, I go down

I RECENTLY acquired a Slogger Rombox for my Electron. In the accompanying literature there is mention of plugging in extra RAM.

Could this extra RAM be used for programming or is it only pagable memory?

If the latter, would it be possible to use this memory for absorbing some, or preferably all, of the screen's needs?

That is, could the 20k or memory used by the screen in Modes 0, 1, 2 be shunted into this extra RAM leaving more

programmable memory free for user use?

I have a second problem which I hope someone may be able to help me with.

I have a copy of the word processor View, and would like to be able to incorporate the Greek alphabet into files.

This is not difficult in itself, but I cannot obtain hard copies of these files, as the printers available to me steadfastly refuse to acknowledge the presence of the graphics.

I can obtain access to two different Epson printers, the

RX80 and an MX80. Suggestions would be gratefully received. — K.V. Kirk, Reading.

● The Slogger Rombox will accept 8k or 16k RAM. Unfortunately this cannot be used for Basic programs or for the screen memory.

It can be used for ROM software though. There will be an article shortly demonstrating the use of sideways RAM in the Slogger Rombox and ACP's RAM cartridge.

Can any readers help with the printer problem?

the grate only to be thrown into a dungeon with a guard outside.

Maybe I am just not an adventurer. I bet you are sick of hearing about Twin Valley.

● The Electron is far from dead. Recent price reductions make the micro an excellent bargain.

We would expect to see an increase in sales, and a large increase in the number of enthusiasts.

There has been a mini flood of software recently, with several new games coming out in time for Christmas. See this month's Software Surgery for details.

Drive choice

I AM thinking of buying a disc drive but do not know whether to buy the Plus 3 or the Cumana 5½ in system.

We have Cumana drives at school so I would be able to use school software at home. But if Acorn bring games out on disc it will be for the Plus 3. — M. Bailey, Leyton.

● Since your prime concern seems to be compatibility, you would probably be better off with the Cumana disc system. This would allow you to transfer unprotected software from school to home and vice-versa.

However, as you'll see from the other pages of our magazine, the Plus 3 is being offered at a very competitive

price and is, of course, the official disc upgrade.

Interface tips

I HAVE a Powersoft joystick interface and was terribly disappointed when I found that Elite, Acornsoft's classic, was not compatible with it.

Since then I have bought many games and found that Gauntlet and Ghoul also do not work with my interface. This time I could not sit back. I changed the programs so that the two games work.

With Ghoul you must load the first part of the program and when the title page appears you must Break it and then type OLD and LIST it.

Now type:

LIST 4700

Then delete the whole line by typing:

4700

Now type in *JOY and put in the keys (method 1). Then instead of typing CHAIN type:

RUN

Now let it run on and load in. Your joystick will work. For Gauntlet the procedure is roughly the same except before loading type:

#OPT1,2
LOAD "GAUNTLET"

As soon as it loads you will get

the prompt sign>... Type LIST then:

LIST 4700

Delete this line by typing:

4700

Now *JOY, use method (1) and instead of typing CHAIN type RUN. It gave me great satisfaction when my joystick worked — Robert Sloan, Chigwell.

● Thanks for the tips Robert.

Line lost

I RECEIVED the November issue of Electron User last week and was very eager to enter the Sprite program on page 18.

However when I got to line 170 I found that the first half of it was missing.

I have typed in the rest of the program so if you would be kind enough to furnish me with the contents of this line I would be most grateful.

Before I go, I must say that I typed out your Karate game and was very pleasantly surprised with the results as was my son!

Terrific magazine, keep up the good work. — R.A.H. Barker, Edgware.

170\$ordch="!&210 AND &FFF
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● Sorry about line 170, seen in its full glory above, which apparently dropped off the page. We'll use stronger glue next time!

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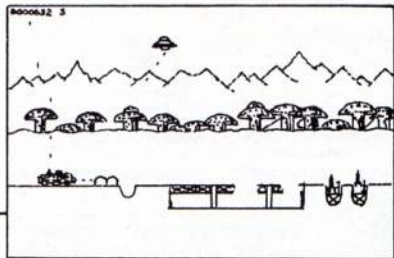
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